NATUR CYMRU
Nature of Wales

Number/Rhif 45 • Winter/Gaeaf 2012-13

- Paths to nature
- Gwylio adar...
- Life after conifers
- Castlemartin Corse
- Art competition
- Books, News, Comment...

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NATUR CYMRU EDITORIAL

Along with the season's greetings, a thank you is in order to all *Natur Cymru* readers. We have managed to buck the trend and actually increase our number of subscribers. Many of you have been loyal readers since the early days, but we welcome a growing band of new subscribers. As a thank you, you will find a bookmark with this edition, with a 25% discount offer from Graffeg.

NATUR CYMRU GOLYGYDDOL

The enthusiasm and commitment of contributors, the efforts on behalf of the Welsh environment which they describe, and the information they relay, deserve a voice. Despite the pressures, and there are many, the Welsh environment continues to fire up and fascinate contributors and readers alike, and gives us much to celebrate.

Winter is a good time for absorbing information by the fire, but it is also a good season for walking off excess food and appreciating nature in the flesh, as it were. This issue reflects on the great opportunities which exist for getting out into the countryside, from the perspective of a volunteer working on footpaths; a guide-writer checking the network; and a former leading politician, who drove forward a great endeavour, the opening of a Coast Path for the whole of Wales. Let's hope similar drive will bring the interests of walkers and of nature together. Access should be an agency for improving biodiversity rather than a pressure on it: appropriate management benefits both the walker and the land through which the walker passes.

Improving land for agriculture has a long history behind it, bringing obvious financial rewards. Improving land for nature is finding its feet, as the rewards it brings become better understood. Two good examples come from Pembrokeshire. One describes how a sensitive landscape which was previously planted with conifers is being transformed into heathland; the second reports on ambitious plans to restore a once great wetland and dune system. Both are splendid examples of how to take the long view, and are an inspiration.

James Robertson

Law yn llaw â dymuno Nadolig Llawen i bawb, hoffwn ddiolch i ddarllenwyr *Natur Cymru*. Yn groes i'r hyn a welir gyda chylchgronau eraill, rydym wedi llwyddo i ddenu mwy o danysgrifwyr. Mae nifer ohonoch wedi bod yn ddarllenwyr ffyddlon o'r cychwyn cyntaf, ond rydym hefyd wedi denu llu o danysgrifwyr newydd. Fel ffordd o ddiolch ichi, yn y rhifyn yma cewch lyfrnod a disgownt o 25% gan Graffeg. Mae brwdfrydedd ac ymrwymiad y cyfrannwyr, y gwaith a ddisgrifir ganddynt er budd amgylchedd Cymru, a'r wybodaeth a gyflwynant, yn haeddu llais. Er gwaetha'r pwysau di-rif, mae amgylchedd Cymru yn dal i gyffroi a rhyfeddu cyfrannwyr a darllenwyr fel ei gilydd, ac mae'n destun gorfoledd inni i gyd.

Mae'r gaeaf yn amser da i ddarllen o flaen y tân, ond mae hefyd yn dymor gwych i gerdded a mwynhau natur yn y cnawd, fel petai. Mae'r rhifyn yma'n sôn am y cyfleoedd gwych sydd ar gael i fentro allan i gefn gwlad, o safbwynt gwirfoddolwr sy'n gweithio ar lwybrau troed; ysgrifennwr arweinlyfrau sy'n bwrw golwg dros y rhwydwaith llwybrau; a chyn-wleidydd a weithiodd yn galed i agor Llwybr yr Arfordir ar gyfer Cymru gyfan. Gobeithio y bydd ymdrechion o'r fath yn dod â buddiannau cerddwyr a natur at ei gilydd. Dylai mynediad fod yn gyfrwng i gyfoethogi bioamrywiaeth yn hytrach nag yn ffordd o roi pwysau arni: gall dulliau rheoli priodol fod o fudd i'r cerddwr a'r tir a gaiff ei droedio fel ei gilydd.

Mae hanes hir yn perthyn i wella tir ar gyfer amaethyddiaeth – rhywbeth sy'n dod â manteision ariannol yn ei sgil. Bellach mae cyfoethogi tir er budd natur yn dod yn fwyfwy poblogaidd, wrth i bawb ddeall y manteision yn well. Ceir dwy enghraifft dda yn Sir Benfro. Mae'r naill yn disgrifio sut y caiff tir sensitif, a oedd wedi'i blannu yn y gorffennol â chonwydd, ei drawsnewid yn rhostir; ac mae'r ail yn sôn am gynlluniau uchelgeisiol i adfer system dwyni a gwlyptir yn ôl i'w hen ogoniant. Enghreifftiau gwych o sut i gynllunio ar gyfer yr hirdymor – ysbrydoliaeth yn wir.

James Robertson

Coast path

There is something indescribable about the uplift which comes from walking along sections of the Pembrokeshire coast footpath, facing into an ozone and salt-drenched breeze, carpets of thrift lining the path and stunning views out to sea. Such a path, not always right by the sea, has been created along the entire Welsh coast, in a project of huge ambition, which has taken great drive to realise. ***JANE DAVIDSON****, the force behind it, tells the story.*

Dylan Thomas' most famous poem, *Under Milk Wood*, starts, "To begin at the beginning". Somehow, it's a lot easier to say than do. I have been asked many times about when I first had the idea for a Welsh coast path. It would be great to be able to trace it back to one moment, but life isn't like that: like many ideas, it took years in gestation, although it was helped by two critical events on the way – first, at the age of 16, walking the Pembrokeshire Coast Path with school friends and seeing my first dolphins; the second was the brilliant decision of two Cardiff youth clubs to walk around Wales for International Youth Year in 1985.

Ideas, brilliant or otherwise, get nowhere without a plan, and the plan didn't take shape until 2006. I was in the kitchen of Rhodri Morgan, the then First Minister of Wales, another keen walker and dolphin watcher. We were debating what to put in the manifesto for the next elections. Ramblers Cymru were calling for greater access to the coast, so my suggestion of an 'all Wales coast path' was a logical extension of that. What I didn't know on that day was that Rhodri would then ask me to deliver on it.

Jon Rothwell

Jane Davidson on Skomer

Interestingly, the next step came about by luck. I was privileged to be asked to join the venerable poet Dic Jones to open the Ceredigion coast path in July 2008. Dic, who sadly died the following year, wrote poems described as "the song of the soil, a celebration of the rituals and rigours of rural life, and of the ties that bind man to both his environment and to his fellow man". It is his poem walkers can read on the coast at Llangranog overlooking Ynys Lochtyn, and with that extraordinary link between culture, heritage, environment and challenge that is somehow so peculiarly Welsh, the Ceredigion Coast Path added another 60 hard won, exhilarating miles to the 186 of the existing Pembrokeshire Coast Path.

Meeting the challenges

The creation of this path was not without its difficulties. In some places, years of negotiations took place between the Council and landowners and, in one specific place where no agreement could be reached, the Council carved a striking new path in the cliff to Cwmtydu. Every metre was hard won and it became clear to me that, although working with landowners to identify optimum routes was paramount, there needed to be legislation in the Government's back pocket which could be used when a greater public good was being derailed by individual landowners. I wrote to Hilary Benn, then UK Environment Minister,

Mel Parry

Heather on the Anglesey Coastal Path at Porthwen

suggesting that the Marine Bill could become the **Marine and Coastal Access Bill**, which is now law in Wales and England.

Over the last few years, long distance trails along the coast of Wales started to fill in; the 95 mile Llŷn Coast Walk, the 75 mile Meirionydd Coast Walk, the 125 mile Isle of Anglesey Coastal Path. Local authorities created new routes on the Gower, at Laugharne, in Newport, on Deeside and suddenly last year it was possible to see that a Wales coast path would become a reality.

This year, Wales is *Lonely Planet's* top global walking destination because of our 870 mile path – 1030 if you include Offa's Dyke – the longest footpath in the UK. It represents the culmination of many thousands of hours of Ramblers Cymru efforts, local authorities' efforts and of volunteer time. The path has also been celebrated in two articles in the *National Geographic*. Journalists from across the world have come to review it. Only a fortnight ago, I was interviewed by the *Oregonian* and the US walking magazine *Backpacker*.

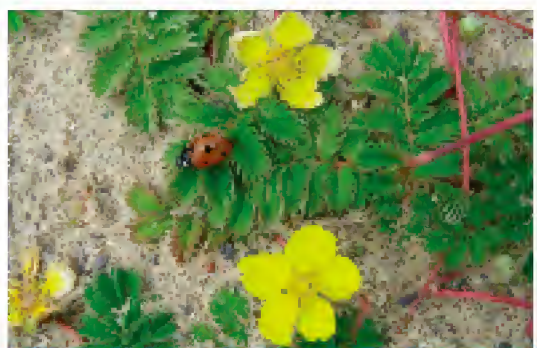
Out of the 65 'Walkers are Welcome' towns in the UK, 22 are on the Wales coast path, 33% of the total UK figure, and more are on the way.

The BBC created programmes for television in English (Derek Brockway) and Welsh (Iolo Williams). I was delighted to be asked to present five half-hour radio programmes for a special BBC Coastal *Countryfocus* which went out on Sunday mornings up to and including the launch weekend, where each programme covered a different part of Wales celebrating the geology, environment, and the social and economic benefits of our glorious natural capital.

Counting the benefits

The benefits of our new coast path will be enormous: indeed we can be confident about its economic and health contribution from the coast paths we have already. Research has identified a £57 return for every £1 spent on maintaining a coast path – and that's money into our local economies. In terms of human health, research published in May has identified the positive health benefits of being by the sea.

The entire path is accessible to walkers, with some sections also made suitable for cyclists, families with pushchairs and horse riders. I hope it will become an iconic recreational asset for Wales, providing new opportunities for local communities and for visitors to the coast. It was tremendously exciting to see the ideas coming forward in the Ordnance Survey's GeoVation Challenge, which provided £125,000 to incentivise the use of technology to demonstrate real benefits to coastal communities on the way. So get your smart phones ready as the 'Perfect Visitor


Gaynor Ainscough

Potentilla anserina with ladybird

Stuart Smith

Skomer bluebells

Companion' is developed to inform your journey – or perhaps you might want to use Food Finder, an online app and offline map which will highlight local, sustainable and delicious food (and beer), farms, wild food hotspots, food activities and places to eat along the path.

Nature's draw

Although the economic and social opportunities abound, there is still one over-riding reason why people walk the coast path and that is because of nature. Wherever you start your journey, be prepared for an instant assault on your senses by the sights, the sounds and the smells of the rocks, the sea, the flowers. When I walked off my old life into my new last May, I re-walked the Pembrokeshire coast path 40 years on. Each day brought changing rock formations and soaring birds – razorbills and guillemots – and the flowers – bluebells, foxgloves, burdock, pyramid orchids, thrift, speedwell, eggs and bacon, and spring squills. We foraged for samphire and wild sorrel. We swam in pools, in surf, with seals, in the rain or magically in the light of the setting sun, showering under waterfalls.

It's always hard to find the words to describe the rocks, the cliffs, the arches, the caves, the bridges you see on your way. The coastline is absolutely phenomenal with Nature at her most imaginative, and also demonstrating evidence of long human occupation with a number of Iron Age hill forts guarding promontories along the way, and the 13th century St Govan's Chapel nestling deep below the cliff edge. The names tell the stories: Huntsman's Leap, Bullslaughter Bay, the Green Bridge, Stack Rocks also known as Elegug (Welsh for guillemot).

It is the contrasts that make the walk so wonderful. Red sandstone, streaked with algae in one place; sheer jagged limestone cliffs and tooth-like rock formations in another. In the hub of the energy industry in Wales in Milford Haven we saw campions, Maids of Honour, cornflowers, bluebells and lots of others I couldn't name, a swan nesting, and a family of jays too young to fly. Further north, the coast path tightly hugs the edges of cliffs, so mile after mile you experience sheer plunges and fantastic rock formations and caves. Interestingly, the further north you walk, the fresher are the

flowers. Dramatic sheer cliffs demonstrate coastal erosion in action, "Every year Pembrokeshire is a little smaller than the year before and the route of the coast path is constantly changing" – so says a Pembrokeshire National Park leaflet.

Where else but Strumble Head and beyond can you partake of wild walking with bracken, heather, coarse grass and precipitous cliffs, and pass a stone pillar commemorating the bizarre, abortive French invasion of 1797 which was seen off by Jemima and 'local yeomen'? Or turn a corner and see a pair of otters playing in the sea in front of the lighthouse?

A grand exit for our grand challenge came on the last day, with winds gusting up to 70mph according to the Met Office, as we tackled what the National Park describes as "the most challenging section of the coast path with frequent very steep hills". In fact, they have put up a sign on the first stile on the first headland out of Newport warning that it is remote and challenging with no escape routes and no facilities! Normally it has stunning views and walking north the southern cliffs of Cemaes Head are hugely dramatic, with the vaulting folds and faults plunging into the sea, tortured in pre-geological times. As someone who swims and kayaks as well, these same cliffs open up a whole new world from the sea with sea-washed caves, some of which you can swim or kayak through, giving an entirely different dimension to being on the edge of Wales.

A new chapter?

Opening up the edge of Wales to all could be the beginning of a new chapter for Wales. 100,000 extra visitors are predicted to come here because of the path; visitors who will be exploring Wales the slow way, contributing to our local economies as they spend weeks rather than days circumnavigating our nation; visitors who will want to use modern

Jon Rothwell

technology to find out more about the Welsh nation, its history, its geography, its society and its nature. Perhaps now is the time for a new app to help visitors understand the range of nature on the path, to help make that reconnection that is so vital if we want people to understand the importance of the relationship between land and people.

Walking costs nothing, so it is truly open to all. You can walk the path north or walk it south for completely different experiences; you can take the 1027 mile challenge if you include Offa's Dyke or the 870 mile challenge of the Welsh coast. You can go on horseback for some parts, on a bike for others or just amble to the nearest viewpoint. The path is there for all people of all ages, so it is there for you. Welcome to Wales, the only country I know where you can 'discover the shape of our nation' under your own steam.

__Jane Davidson__ is President of Ramblers' Cymru. She was previously Minister for Environment and Sustainability in the Welsh Assembly Government 2007-2011.

Jon Rothwell

Celia Thomas

Life after conifers

Longhorn cattle

The post-war period saw rapid expansion of the national conifer forest. In places this compromised special landscapes and habitats such as heathland. Yet putting the heathland back is no easy matter. ***CELIA THOMAS*** *describes the challenges involved in restoring a Pembrokeshire plantation to heathland.*

Sam Bryan

Above and to the south of Newport in Pembrokeshire lies a ridge of hills that includes the enigmatic Carningli (Angel Mountain) which rises from the coast to form a rocky peak at 1100 feet. This ridge is separated from the Preseli Hills by Cwm Gwaun, an 11 mile long valley formed by glacial action, which enters the sea at Fishguard. The hills form a substantial inland section of the otherwise coastal Pembrokeshire Coast National Park, and are designated both as a historic landscape and, in various combinations, SSSI (Site of Special Scientific Interest) and SAC (Special Area of Conservation) for their heathland habitats and species. The Gwaun Valley's steep slopes are wooded with Ancient Semi-Natural Woodland that is also SSSI, parts of which contribute to the North Pembrokeshire Woodland SAC. In short it is a special area of spectacular scenery with semi-natural heathland and woodland habitats and species.

During the 1960s and 70s conifers were still being planted both up on the hills and replacing our native 'scrub oak' woodland, which had been felled sometime between 1910 and 1930 when the demand for pit props was high. The Pembrokeshire Coast National Park hadn't been

Celia Thomas

Allt Clyn after the conifers have been felled

around for long (since 1952) when some significant plantations were created in Pembrokeshire, both by private investors and by the Forestry Commission itself, through land purchase, creating the public forest estate we have today. The National Park was, at best, only able to influence small boundary changes and more than 600ha (1800 acres) of conifers were planted on the Preseli hills and small patches in the Gwaun and Nevern valleys. When a much larger proposal to coniferise more than 40 hectares at the heart of the Gwaun threatened to tip the balance in terms of both landscape and wildlife, the National Park stepped in and, in 1971, took over a lease to prevent this large scale change. Since then the value of both the native woodland and heathland areas has been recognised and no further conversions or new planting have occurred. Instead the National Park has begun a programme to reverse the inappropriate land use this era brought about.

In 1997, following the successful clearance of conifers from over 20ha in Coed Pentre Ifan, several larger hillside plantations were offered at the same time.

The 70ha Penlan spruce plantation was an obvious choice. It was the only block on the Newport–Gwaun divide, so removing this would restore a whole ridge in terms of landscape improvements. It was also immediately adjacent to the Woodland SAC to the south and the Carningli Commons SSSI to the north. It was effectively a hostile barrier to a significant species, the southern damselfly, which has an important outlying population immediately north of the site, separated from areas to the south by a mile of conifers. In addition, all timber harvested had to pass through Newport, a small town with existing traffic problems, which was never an ideal exit for continuous timber harvesting.

Purchase, clearance and replanting

With the support of the National Park Committee Members and with Heritage Lottery Fund and Countryside Council for Wales (CCW) grant aid, the National Park felt confident enough to both purchase and undertake site clearance and restoration. In those days it was more usual to obtain recently felled sites for restoration. In this case, the trees provided an income to fund site clearance and other works; and, importantly, site clearance could be planned to follow immediately after felling, not years later, providing the best opportunity for regeneration of heathland species.

Before any work could start we had to satisfy the Forestry Commission that the impact of felling and not restocking was acceptable here. Preparing an Environmental Impact Assessment (EIA) and consulting on this with the local community took about 18 months. It was a lengthy but useful exercise, as we identified issues we might not otherwise have addressed. The biggest concern locally was the movement of timber through the already congested centre of Newport. Timing was not on our side as there had recently been a lot of money spent on

Natural England/Paul Glendell

Bell heather • *Erica cinerea* • Grug y mêl

improving the pavements, passing spaces and kerbs, and there was huge concern that this would be damaged by timber lorries carrying very heavy loads. As a compromise, lorry movements were limited to only 2-4 per day, with a shut down during the busy holiday period of July and August each year. This actually worked in our favour as we spent these summer months removing brash (branch waste from the recently felled trees) to provide the best conditions for regeneration of heather. An access route at a cost of £40,000 was required. In addition it cost about £1,000/ha to move brash short distances from the felled areas. A depressed timber market and distance to the road (over 1.5 miles) reduced sale value of the timber. Timber sales generated between £1,500- £2,000/ha, leaving a small margin to cover other costs. Rather than employ a project officer we worked with a Forestry Agent to develop a harvest plan that would meet restoration requirements. He would also oversee the harvesting undertaken through a separate contract and sale of timber. Drawing up the legal contracts took more of my time and energy than any of the site issues, but the resulting partnerships certainly smoothed the way for the project.

Regeneration of key heathland plants such as Ling *Calluna vulgaris*, Bell Heather *Erica cinerea* and, in wetter areas, Cross-leaved Heath *Erica tetralix*, is determined by factors such as the seed being close enough to the surface to germinate and the fact that it appears to like the chemicals from smoke. This is why burning can help regenerate heathlands. Under conifers a deep litter of pine needles builds up, largely smothering small seed. Gorse seed, being much larger, is however pretty good at growing through this. Whilst there was little heather or any vegetation left on site under the conifers, we know heather seed can last 30 years or more and had been flowering on site as recently as 1983, as evidenced from aerial photos.

Conifers were felled by harvester, using defined brash routes to extract the timber by forwarder. This minimises ground damage and, compared to hand felling and winching timber out, is certainly preferable even in the wet areas. We thought it might be safer to do high risk

Celia Thomas

Stumps soon disappear under vegetation

areas around water supplies on site by hand but this soon created more sediment than using the machines. Except in the wettest areas, removing brash is important not only to allow vegetation to return but also for future access to the site by grazing stock and machinery. Following harvesting the brash lies in 'racks' where the harvester lays the branches to drive over, minimising ground damage. From these racks main brash routes are developed to enable the heavier loads of timber to be extracted. We planned these main extraction routes to be in positions where we could eventually stack the brash from the racks, creating linear 'hedges' eight or more feet high, which would be left to rot down. This also meant we limited the distance we moved brash to no more than 100m. These key routes become embedded in the ground as heavy loads repeatedly get carried over them. They also act as good drain blockers, especially in wet areas, helping to reduce downhill flow of water. This is an important issue when felling large plantations, as there will be more water reaching the watercourses until vegetation can re-establish. Studies have shown that conifers can intercept up to 30% of the rainfall falling on a site.

Benefits of stumps

The question of stump removal is interesting and I was asked to consider it. Apart from generating very large numbers of stumps (stumperies in gardens like that at Highgrove are a limited outlet), any soil disturbance during felling risks large amounts of sediment getting into watercourses. This is not good for either freshwater invertebrates or fish eggs, causing many problems downstream. Whilst stumps do make the ground less accessible to machinery, they don't affect grazing stock. In addition we found that they provided an opportunity for early regeneration of heather and heath bedstraw, as the needle mat washed away from the stump tops, leaving bare soil. They also provide opportunities for small mammals, a boon for our kestrel, occasional merlin, kites and buzzards. Wasps also like rotting roots, so they are not good places to sit, as we found out with one school visit!

A site clearance trial was set up with Forestry Commission Research to demonstrate eight different ground treatments. The trial will be completed soon, though the most obvious result can be seen on site now. Without grazing and less ground disturbance

Natural England/Peter Wakely

Cross-leaved heath • *Erica tetralix* • Grug croesddail

than elsewhere, gorse has largely taken over the 64 15m x 15m plots. Elsewhere we trialled mulching and prepared an area where all brash and stumps were flailed to ground level. This quickly gave us a clear indication that a covering of mulched tree stump smothered heather seed but allowed gorse and wind-blown grass seed to thrive, and that the stumps left alone provided a good opportunity for heather and other plants to get underway.

Ten years on, the brash 'hedges' have rotted down slowly but surely and are barely two feet high. There is little evidence of any enrichment down slope, with only a few more rushes (one of the indicators of enrichment) in areas where rush already existed.

The speed at which the site recovered following felling was unexpected. Clearing the brash immediately after felling appears to be the key to heather regeneration, as the re-colonisation process is not interrupted and gets underway more effectively on more open ground. It also became apparent that when the forwarder travelled lightly over the ground to remove brash, the resulting ground disturbance of the needle mat was beneficial. Grazing was reintroduced immediately after felling in 2006, much sooner than planned due to the exceptional growth on site.

Not all the site is destined to return to heathland. Reducing woodland cover at a time when we should be increasing, not reducing, our carbon store is difficult to justify (peatland excepted). There is virtually no deep peat at Penlan, and there is an opportunity for native woodland to develop beyond the valley up onto the hills. It is only grazing pressure and agricultural improvement that has created the artificial line between our wooded valleys and open hill land. Here we can allow regeneration of scrub and trees up on to the hill once again.

Whilst this site has been successfully re-colonised by both heathland and woodland, after being under conifers for 30 years, it remains to be seen if the same will be true after a second or even third rotation of conifers at other sites where we may want to restore our best landscapes or deep peat habitats.

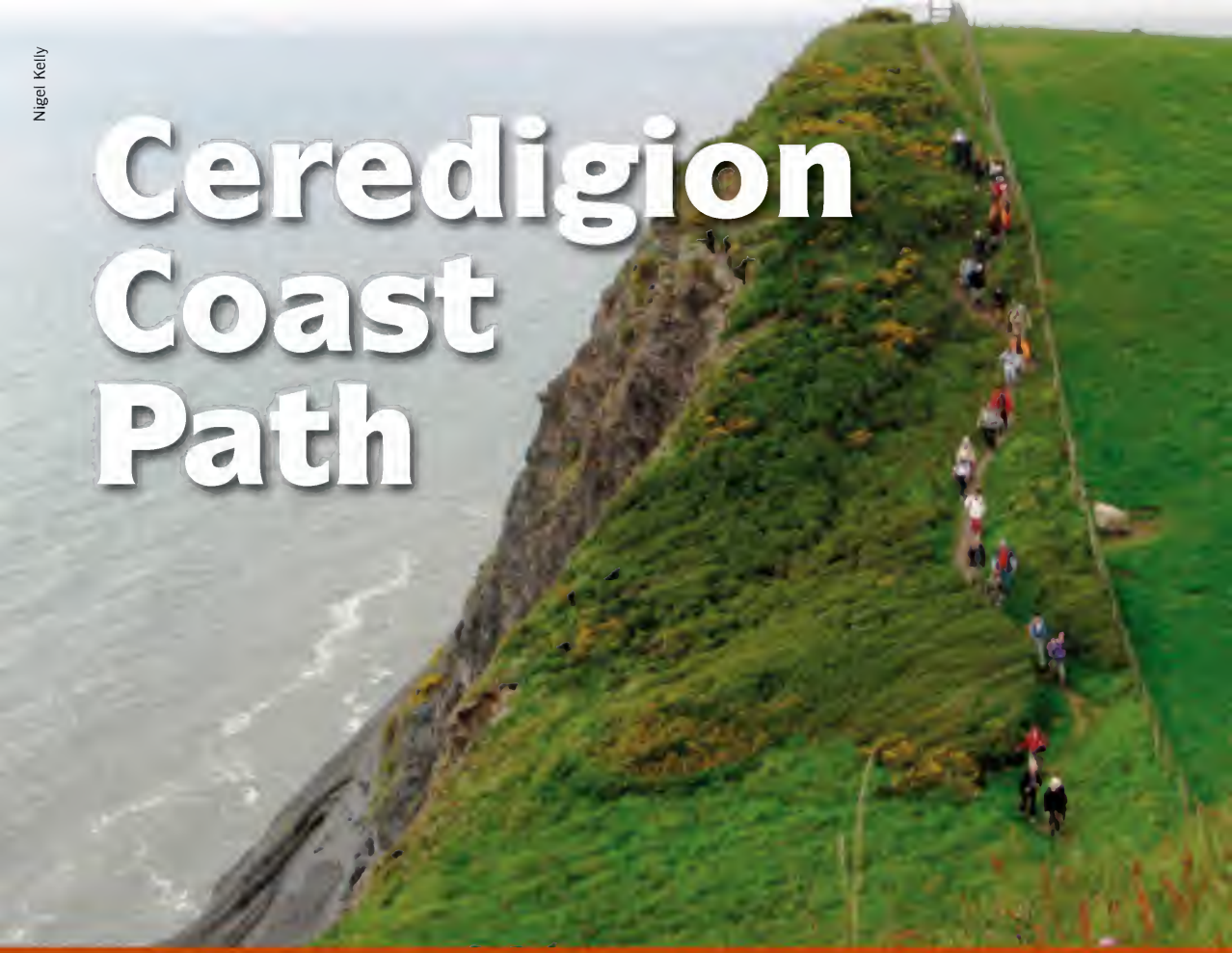
Celia Thomas

Brash removal

Celia Thomas *is the Woodland Officer for Pembrokeshire Coast National Park. With a degree in Botany and Zoology, a desire to live close to nature brought her to Pembrokeshire in the 1970s. Having worked for The Wildlife Trust and Nature Conservancy Council in Pembrokeshire, woodlands have not always been the focus of her work. Management of the Countryside is her passion and as well as conservation land management, Celia has run a small farm with a Dexter suckler herd producing grass fed beef, whilst restoring traditional hay meadows and wood pasture.*

Nigel Kelly

Ceredigion Coast Path



The huge bite of Cardigan Bay is the backdrop for some of the finest coastal scenery in Britain. ***NIGEL KELLY*** *describes the attractions which walking this route, rich in history and wildlife, offers, and the work which makes its enjoyment possible.*

Ceredigion is the unknown county. Sandwiched between the Snowdonia and Pembrokeshire national parks, it is usually overlooked. Less easy to reach than areas to the north and south, it remains relatively unknown, even to many living in Wales.

Yet if you stand at almost any point on the sixty-mile Ceredigion section of the Wales Coast Path, you will be treated to the magnificent amphitheatre of Cardigan Bay. The rim extends from Strumble Head round to Bardsey Island, with a backdrop from the Preseli Hills to Snowdon. The scale and variety of unspoilt coastal scenery in Ceredigion seem always to take visitors by surprise. At the southern end there is the sheltered Teifi estuary, and at the northern end the extensive raised peat bog of Cors Fochno and sand dunes of Ynyslas. In between there are long sections of cliff and cove that are the equal of anything in Pembrokeshire.

The Ceredigion coast towns are also distinctive. Cardigan is a relatively

Nigel Kelly

Ffos-lâs farm, soon to lose its battle against erosion

prosperous market town. New Quay's tumbling lanes attract tourists as they once did Dylan Thomas. Aberaeron's spacious Georgian streets and speciality shops encourage the saunterer. Cosmopolitan Aberystwyth is the place for a rainy day spent in the absorbing trio of the Museum, National Library and University Arts Centre. Borth, not quite a town, is where Midlands caravanners mix relaxedly with alternative life-stylers who came and never left.

Between the towns you can encounter one delight after another. Cwmtydu's tiny sheltered beach is lost down lush lanes. North of Llanrhystud, the sadly ruined Ffos-lâs farm stands dramatically atop cliffs of fast-eroding boulder clay, deposited in the last ice age from as far away as the Firth of Clyde. At low tide on Ynyslas Beach a submarine forest of ancient tree stumps appears, a gift to photographers and artists. All along the coast there are echoes of Cantre'r Gwaelod, lands lost to the sea over millennia. At Wallog north of Clarach you can walk out to sea at low tide on Sarn Cynfelyn, a moraine spit. An elderly Llangrannog resident pointed over a cliff and recalled where an orchard grew in her youth.

Working on the coast

I am fortunate to be a member of the County Council and Ramblers' Cymru volunteer work party that opens up and maintains Ceredigion's 1,566-mile rights-of-way network. In 2007-8 we assisted in creating new stretches of coast path previously closed to the public. Curious cows and seals inspected us as we cut cliff-top ledges and installed boardwalks and bridges. On popular sections of established path we replaced stiles with dog-friendly

Nigel Kelly

Replacing a stile with a kissing gate – easier access for many

Nigel Kelly

Kissing gate construction

kissing-gates. We go out in all weathers. I was once removing a stile on a wild March day when I was soaked by a wave breaking 60 feet below me. We continue to help the countryside rangers to maintain the Path in good condition. Several sections, notably between Clarach and Borth, are subject to continual landslips, requiring rolling agreements with landowners to move the path inland.

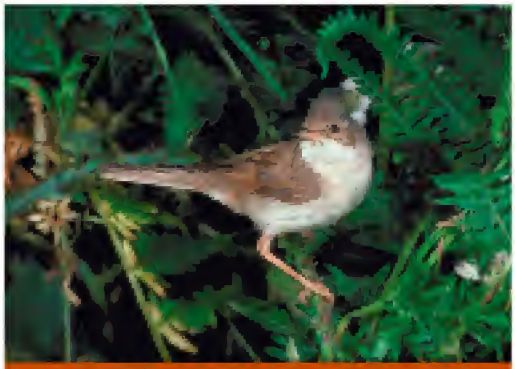
One of the delights of working on the Coast Path is the company of dolphins and occasional porpoises, kites, chough and all kinds of seabird. I also work as a volunteer for the Wildlife Trust. Annually we cut the grassy path into the unique, wind-sculpted sessile oak woodland on the cliff-edge at Penderi. A short diversion from the Coast Path, it shelters whitethroat, wheatear, stonechat and linnet from the Atlantic winds. Every June we boat out to the Cardigan Island Reserve to inspect and count the island's birds. Coast Path walkers should also soon be able to see the island more closely, after legal attempts to block access to this section of coast were defeated.

A helpful Cab-a-Bag scheme can move the luggage of Coast Path walkers to their next accommodation each day. The all-year Cardi Bach bus service in the southern half of the County is complemented by regular parallel bus and rail services in the northern half. The Council has developed a series of attractive paths that loop inland from the Coast Path at Cardigan, New Quay and Llanon, and more are being prepared around Llanarth and Llanrhystud. More ambitiously, a linear Coast Path walk can be turned into a circuit of the whole county on the waymarked Borth to Pontrhydfendigaid and Aberystwyth to Tregaron (Ystwyth) trails. Paths can then be followed down the beautiful Teifi valley to Cardigan.

There are still improvements to be made. Accommodation is uneven in coverage, and sometimes quality. Council bus-stop information is poor by national standards. Way-marking is still occasionally lacking, particularly on inland links. There is a need for more interpretation panels in places such as Aberystwyth harbour and Borth. The tendency of tea shops to close around 1600 hrs, just when people might want tea, is a familiar one in Wales. Aberporth Ministry of Defence base provides a dull diversion for the Coast Path, but also 130

Mandy Marsh

Chough feed in short coastal turf



CCW/Michael Hammett

Whitethroat • *Sylvia communis* • Llwydfron

jobs, locals will remind you. At least the Path's current long inland detour from the coast around Cardigan Island should soon end. Walking is not part of Cardi culture. More could be done by the Council and other agencies to enthuse local people – especially young people – about the Coast Path's health, heritage, wildlife and economic benefits.

The Ceredigion Coast Path was opened from Cardigan to Ynylas in 2008. All of it was incorporated into the Wales Coast Path in 2012 except the northernmost section to Ynyslas. The barrier of the Dyfi Estuary sent the WCP inland in the direction of the Dyfi's lowest crossing point at Machynlleth. This is a delightful section, bordering a wealth of wildlife around Cors Fochno, and offering endless vistas of the Dyfi Estuary and the rounded bulk of the Tarren mountains. Yet the "lost" few miles of the Ceredigion Coast Path beside the Afon Leri and out to the Ynyslas dunes should not be missed. Walk to the mouth of the estuary and you may hear the folk song, *The Bells of Aberdyfi*, played just across the water from the bells of St. Peter's Church.

I have now led walkers from all over the UK and Europe along the Path. They have been uniformly impressed, often returning to do more. Inevitably, I have acquired some favourite places. There is the curious colonial-style house above Llangrannog, on the path to Ceredigion's other island, Ynys Lochtyn. Near here the composer Edward Elgar claimed to have heard a local choir singing, and found a theme for his masterpiece, the *Introduction and Allegro for strings*. Just north of Aberaeron is the hilltop church of Aberarth, one of many possible diversions from

Nigel Kelly

Footbridge construction at Mwnt

the Coast Path. The village was home to sailors and boat-builders, attested by the stories on the gravestones. The view from here has to be one of the finest on the whole coast.

Mwnt Church is famed in postcard and calendar. Just behind it, the perfect 250ft cone of Foel y Mwnt is an irresistible climb. Just south of Aberystwyth is Tanybwlch Beach, a mile or more of storm-piled rock and sand, where only the most salt-tolerant vegetation survives. It is best walked on a day of wild sou'westerlies, when the crashing waves drown conversation and spume scatters away inland. This is where I once found a dead, storm-beached twenty-two foot shark. Here you may struggle even to stand up, but you will thrill to be alive and there.

Nigel Kelly *is the Group Publicity Officer for the Aberystwyth Ramblers. He has been a member for over 20 years. He is also a keen walk leader, a member of the footpath maintenance group and a volunteer with the Wildlife Trust.*

More details on the Coast Path and other Ceredigion walks are available at
http://tourism.ceredigion.gov.uk/saesneg/walking

Richard Ellis

Castlemartin Corse:

restoring a great wetland and duneland system

Castlemartin Corse in 1992, before ditch clearance ceased

In the face of sea-level rise and the added pressures this is already exerting on coastal habitats and farming practices, coastal land management needs to take the long view. The National Trust is doing just this, working with landowners and natural processes in a bid to restore a once great wetland and duneland system, as RICHARD ELLIS reports.

Castlemartin Corse in Pembrokeshire is both the best example of a calcareous fen in Pembrokeshire, and a relic of a once great wetland. With a strategically placed farm tenancy returning to the National Trust in April 2013, we are in a position to undertake a major project in landscape and habitat restoration. It also presents us with the opportunity to enable people to enjoy the wildlife of this rich and diverse area.

With Freshwater West beach at its seaward end, the Corse occupies a narrow catchment which reaches about 10km inland to the hamlet of St Petrox. It is drained by the stream and wetland of Castlemartin Corse, and is between 1 and 2km wide for much of its length. The low-lying flood plain stretches about 2.5km inland. Ridges to north and south carry B roads connecting the villages of Castlemartin and Angle to Pembroke.

The beach is backed by a major dune system, with the Corse draining through a man-made channel and culvert onto the shore. Castlemartin

Freshwater West
Gupton Farm

Corse, with its tenanted farms, was part of the vast Cawdor estate until it was broken up in 1976. Significant parts of it – Freshwater West dunes, Gupton Farm, and Kilpaison and Broomhill Burrows, together with a scatter of upstream woodlands – passed to the National Trust that year.

Our vision

Our vision is to reconnect Freshwater West dunes with Kilpaison and Broomhill Burrows, and restore both dunes and wetland to a connected and fully functioning ecosystem. The rising water table is already making the site wetter, and in 100 years the lower part of the Corse will be tidal.

We want to explore the possibilities for the fen meadow habitat to migrate to the improved part of the floodplain further upstream, as long as peat is present. We intend to return the lower, sandy fields of Gupton to dune grassland, mirroring Kilpaison and Broomhill across the watercourse. The fen meadow has suffered from a lack of grazing in recent years. We intend to graze it with livestock which like the wet conditions, and we are researching the options. Water buffalo, White Park or Highland cattle and Konik ponies are all candidates.

We should also like to implement strategic solutions to Freshwater West's notorious parking and camping issues, as well as access to the natural treasures of the dunes and wetland. This will include access on foot into the interior, hides and interpretation. This will make the area one of the most exciting birdwatching and wildlife destinations in Wales.

Historical perspective

The catchment has seen many vicissitudes over the centuries, starting with the drainage of the fen for agriculture during the French Revolutionary and Napoleonic Wars. John Mirehouse of Brownslade, who oversaw the drainage works, was awarded the Society for the Encouragement of Arts, Manufacture and Science's gold medal, granted in 1800 for being "the most successful reclaimer of waste [sic] land".

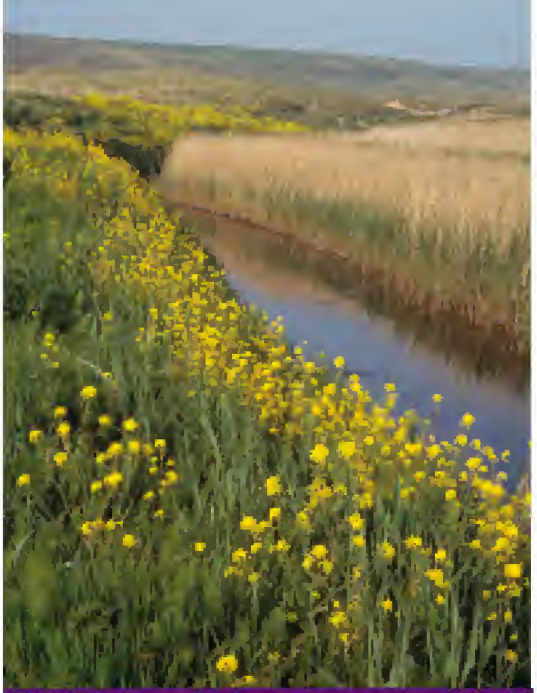
The area under production ebbed and flowed over the next 200 years, mirroring the economic fortunes of farming. In 1863 Charles Babington visited the

site while compiling his account of the botany of South Pembrokeshire for the *Journal of Botany*. He reported that, though the Corse had been drained some 60 years previously, it had "since fallen back into a state of coarse wet pasture". It was "nearly deprived of all its peculiar plants, a few only of them remaining in the ditches".

Soon after the Second World War the area reached its highest level of production since annual returns to the Board of Agriculture were first made in the 1860s. This was achieved mainly through ploughing improved grasslands rather than reclaiming rough pasture.

The dunes were used for training prior to D-Day. 1946 aerial photographs show large areas of bare sand on Kilpaison and Broomhill Burrows, which went on to be commercially quarried for sand until 1982. When this ceased, the area of the sand quarry was sensitively restored to dune slack habitat.

The surviving 30 hectares of fen and fen meadow occupy the seaward and lowest part of the Corse, and probably correspond to the area where reclamation



National Trust

The corse

was least successful. The Environment Agency continued with maintenance of the stream, leat and drainage ditches until 1997 when, following a review, this stopped.

Jonathan Hughes

Kilpaison Burrows

From Charles Hassall's *General View of the Agriculture of the County of Pembroke – a submission to the Board of Agriculture & Internal Improvement. London, January 1794.*
The only fen of note in this county, upon which any modern improvement has taken place, is Castlemartin Cors [sic], a tract of several hundred acres which within these 4 yrs., was a perfect bog of little or no value. Mr Campbell of Stackpole Court, having obtained an Act of Parliament for draining and enclosing it, such an improvement is already made as must convince every observer what ground of this sort is capable of, under skilful and attentive management. It is now completely drained, inclosed, & divided by ditches, most of which are planted with willows or other aquatics...& the greatest part of it is under a judicious course of tillage preparatory to its being converted into meadow.

Being in its original state covered with rush, sedge, or coarse unprofitable grass, the improvement has been effected by paring (with plough, as in the fens of Cambridgeshire) and burning as a preparation for cole-seed, after which a crop or two of corn has been taken to bring the soil into tillage fixt to receive grass seeds. No agricultural improvement that I have been a witness of in the course of extensive and long experience, has succeeded better than this undertaking, which promises in a very few years to become some of the most valuable land in the county.

From Richard Fenton's *A Historical Tour through Pembrokeshire, 1811.*
About twenty years ago this Corse was inclosed by act of parliament, affording a most encouraging specimen of the advantages to be derived from such a species of improvement on lands of similar quality, yet suffered to remain a reproach to their proprietors. The soil of this reclaimed tract, having been the rich deposit of ages, requires no manure, and if it had a fault, it is, that it sends up too rank and luxuriant vegetation.

Coastal change and rising water table

With the lowest part of the valley to landward of the dunes being only 8 inches above high spring tides, climate change and the predicted rise in sea level mean that things are changing, and fast. A Light Detection and Ranging (LiDAR) topography map was made as part of the study carried out for the National Trust by Halcrow in 2007-8. This revealed the lowest part of the valley landward of the dunes to be 3.5m above Ordnance Datum (OD). Mean high water spring tides, measured at Milford Haven, are 3.29 metres OD, some 21cm or about 8 inches lower than the lowest part of the basin (excluding ditches). In other words, the lowest part of the flood plain is practically at sea level now, and is only protected from tidal inundation by the shingle and dune ridge, and the road. The figure of 5 metres above sea level for the "lowermost parts of the peaty basin" quoted in the SSSI citation is highly misleading.

The current round of Shoreline Management Plans (SMP2) are based on an estimated sea level rise, in the current century, of about 1 metre. The tidal gauge graph for Holyhead – the longest continuous run of data for Wales – indicates that sea level has already risen by about 25 cm since the 1930s. Halcrow estimate that an area corresponding to the 4.26 metre contour will be tidal by the end of the century. This corresponds, very roughly, to the area currently subject to flooding following prolonged heavy rain.

The B4319 road cuts through the foredunes and principal dune slacks. In places it is only metres away from the top of the shingle beach, and passes over the outlet channel draining the Corse. It prevents the free movement of sand through the system, and the natural drainage of the Corse through the dunes and beach. Paragraph 16.2 of the Lavernock Point to St Ann's Head SMP2's "Identification of Preferred Policy" states:
It is proposed that a section of the B4319 (local access road) which passes through the dunes is removed and that agricultural land inshore is managed for environmental interest. Closure of a section of this road would enable the dune system to function fully naturally as a whole system, preserving its environmental interest.

Gaynor Ainscough

Early marsh orchid • *Dactylorhiza incarnata*
• Tegeirian-y-gors cynnar

This is unlikely to happen until the second or third epochs of SMP2 (20-50 or 50-100 years). In the meantime, rising sea levels will gradually reduce the time when fresh water can drain freely onto the beach. The ongoing rise in the water table and run of wet summers is already presenting serious challenges to the main users of the upstream section of the flood plain.

Wildlife of dunes and wetland

The Corse is home to important fen and fen meadow plant communities including *Phragmites australis* and *Juncus subnodulosus* communities. The former sand quarry in Kilpaison Burrows now has wet dune slack plant and invertebrate communities, including *Chara* species in the pools, and fine displays of early and southern marsh orchids *Dactylorhiza incarnata* and *D. praetermissa*. A recent find has been petalwort *Petalophyllum ralfsii*. Among the numerous Odonata species, the black-tailed skimmer *Orthetrum cancellatum* appeared for the first time in summer 1995 and has been present ever since.

The breeding birds of Castlemartin Corse include reed, sedge and Cetti's warblers, reed bunting, water rail, moorhen, little grebe, mallard and teal. A pair of marsh harriers nested in 2011, and were observed food-passing and bringing food to the nest, but the breeding attempt failed. A female was present throughout summer 2012. Lapwing attempt to breed, but at such low density that predation usually results in failure.

The Corse is a regular winter roost for hen harriers, and a solitary crane spent several weeks on the fen meadow and in arable fields in winter 2010-11. Huge numbers of ducks and waders arrive when the Corse is flooded, and a watch towards dusk can yield half a dozen birds of prey – hen harrier, buzzard, sparrowhawk, peregrine, merlin and kestrel – within an hour. Chough are present throughout the year, often feeding in the dunes and the old sand quarry.

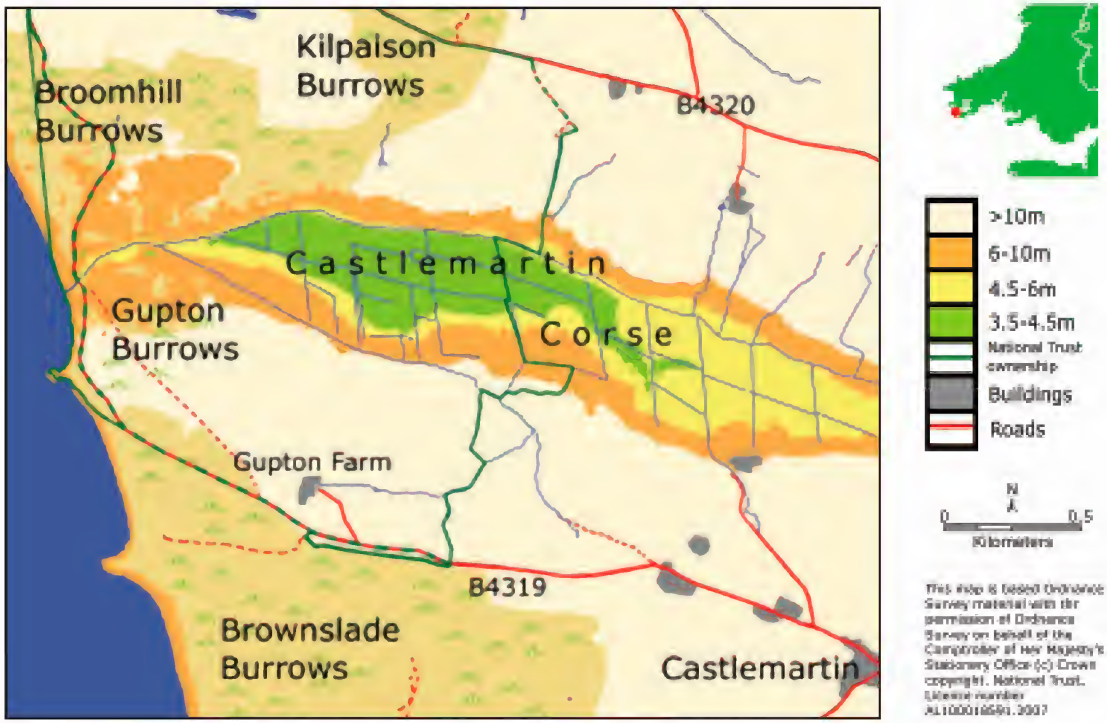
The agricultural context

The Castlemartin Corse stream divides the National Trust's holding into two contrasting halves. Kilpaison and Broomhill Burrows, on the north side of the wetland, are unimproved dune grassland, grazed by beef cattle roaming over the dunes. Whilst the dunes, as the Countryside Council for Wales (CCW) has rightly identified, are in need of greater mobility, they are notably lacking in invasive scrub or undesirable species, and are in generally good order.

Gupton Farm, on the south side, includes the reed fen and fen meadow SSSI and a swathe of fields bordering the wetland which are reclaimed sand dune. The tenancy of Gupton Farm has been in the same family for three generations, and was home to a prize winning dairy herd of Ayrshire cows until ten years ago. Since then 40 hectares of the land have been used as accommodation land for 500 dry dairy cows belonging to another farmer, fed entirely on silage from feeders. The resulting brown wasteland has then been planted with fodder maize each spring, crops which do very badly in the sandy soil and salt winds but which are nevertheless enlivened by a rich sward of arable weeds. This regime is one which we have been unable to modify owing to the farm being in an old-style agricultural tenancy. It is this tenancy which is coming to an end in April 2013.

What are we doing?

Our first step is an accurate soil map and land capability study, the better to understand the most suitable areas for pasture, arable, sand dune reversion or migration of fen meadow.



Our options are tempered by the possible effects of our actions (or inaction) on our upstream neighbours. The next major farming enterprise upstream on the Corse is an intensive dairy operation which relies on improved fields on the flood plain for summer grazing and cutting silage. The recent run of wet summers, together with the gradual rise in the water table, has rendered the flood plain increasingly unusable for weeks at a time. The causes for the rise in the water table are complex, but the withdrawal of ditch management by the EA and the removal of the final section of the beach outfall have played their part. One part of our solution is to offer our neighbours land on Gupton Farm, away from the watercourse, to remove their dependency on the flood plain and to enable the wetland to be managed holistically for nature conservation and access.

Stakeholder engagement and the Halcrow study

Our stakeholder engagement process began in 2005, with a meeting at the home of one of the key upstream farmers. This was attended by our partners from CCW, the Environment Agency, Pembrokeshire County Council (who are landlords of one of the neighbouring farms) and Pembrokeshire Coast National Park.

We then commissioned a study by Halcrow, whose objectives were to collate existing information, advise us on everything from farming practices to sea level rise, and carry out a consultation with our neighbours and partners. The first significant outcome from Halcrow's report in 2008 was the removal of the problematic final section of the outfall structure on Freshwater West beach, a first step towards restoring the natural hydrology and drainage.

We shall continue to work closely with our partners and neighbours as things move forward. Working with natural processes, our goal is a farming solution which will be an asset to the landscape, and to restore one of Wales's most exciting dune and wetland wildlife habitats to its former glory.

Richard J Ellis *was National Trust Head Warden, Pembrokeshire, until his retirement in October 2012. He has had 33 years experience as coastal manager in Pembrokeshire and Northern Ireland.*

Art Competition
INSPIRED BY NATURE

After four years running an 'Inspired by Nature' writing competition, we have decided that 2013 is the year to give artists an opportunity to show off their talents. Original artwork on the cover of the magazine has become one of its distinctive features. One of our subscribers was so impressed with a recent cover that he paid £400 to buy the original artwork! Although most of our illustrations are photographic, and the quality and availability of photographs have soared, art can do something unique: as well as providing striking images, artists can convey meaning, capturing not only the detail of an image as it meets the eye, but also what it conjures up to the artist. I am often disappointed that my photos capture little of the excitement and intensity that I felt when I took them. An image of the natural environment seen through the eyes of the artist can be one step closer to that first hand experience.

James Robertson

Art Competition

We are looking for artwork to provide a striking front cover for *Natur Cymru* that will inspire people to pick it up and read it. As the cover to this edition shows, you can use any materials and let your imagination run free.

The art must be relevant to Wales (no tigers please!) and feature wildlife in a natural setting – animal, plant or anything in between. We have nothing against pure landscape, but your work should have that extra wildlife element that will make a relevant cover for a nature magazine.

Because *Natur Cymru* is published quarterly you have the chance to indulge in your favourite time of year – all the seasons are relevant and desirable.

Please make sure you follow these points:

- Dimensions: the magazine canvas is roughly square but slightly taller than wide.
- Text: within the artwork there needs to be a 'quiet space' in which a bulleted list of articles can be placed in either black or white.
- Colours: your colours must complement or be able to stand up for themselves against our masthead logo of blue to green.

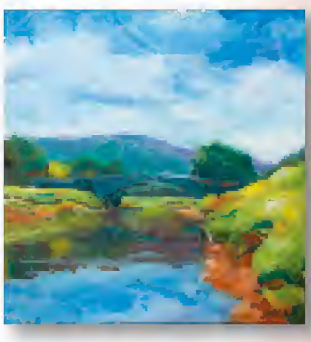
Prizes

- 1st prize - £250, sponsored by WWF Cymru
- 2nd prize - £250 voucher from Plas Tan y Bwlch towards one of its eight residential art courses
- A trip to Skomer Island, donated by The Wildlife Trust of South and West
- £100 voucher for artists' materials, donated by Ken Bromley Art Supplies

How to enter

For full details please visit our website www.naturcymru.org.uk or call us on 01248 387373 and we will post details to you.

The competition is open to anyone and is free to subscribers. Entries must be received electronically by midnight 30th April 2013. **Do not send original artwork**.



Good luck, and please pass this on to your arty friends!

Ten terns - celebrating our tenth anniversary

'Tis the season to be giving

Christmas comes but once a year whereas *Natur Cymru* slips through the letter box once a season. Forget the socks, forego the chocs and buy your friends or loved ones an enduring subscription to *Natur Cymru*; a gift of natural inspiration for just £16 or the cost of 32 second class stamps!

Not only that but you'll be giving someone the chance to enter our Art competition for FREE!

If they already have a subscription, how about a binder or maybe a set of back editions to help build a collection?

See the inside cover for details.

Y Nadolig yw'r adeg i fod yn hael

Unwaith y flwyddyn yn unig y daw'r Nadolig, ond mae *Natur Cymru* yn llithro drwy'r blwch llythyrau unwaith bob tymor. Naw wfft i hosanau a siocledi – beth am brynu tanysgrifiad *Natur Cymru* i'ch cyfeillion a'ch anwyliaid? Anrheg ysbrydoledig am £16 yn unig neu gost 32 o stampiau ail ddosbarth!

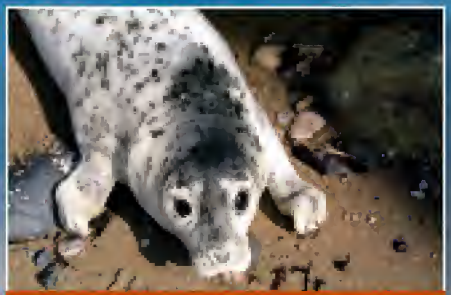
A hefyd, mi fyddwch yn galluogi rhywun i gymryd rhan yn ein cystadleuaeth GELF yn RHAD AC AM DDIM!

Os oes ganddynt danysgrifiad yn barod, beth am brynu rhwymydd neu gyfres o ôl-rifynnau i ychwanegu at eu casgliad?

Gweler y tu mewn i'r clawr i gael manylion.

At the sea's edge

This centre spread illustrates a few examples of the wildlife which may be encountered beside, or within easy walking distance of the Coast Path, the subject of several articles in this edition. The history and geography of the country, and perhaps the culture and psychology of its people, add meaning, opportunity and identity to its seaward boundary; the variety, abundance and distinctiveness of its wildlife are an important part of this.

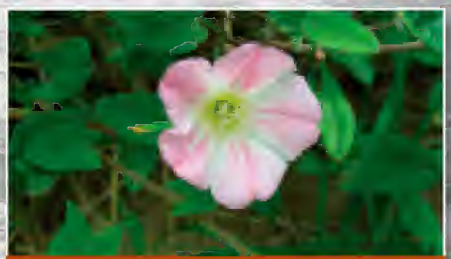


Mike Alexander

Grey seal • *Halichoerus grypus* • Morlo cyffredin

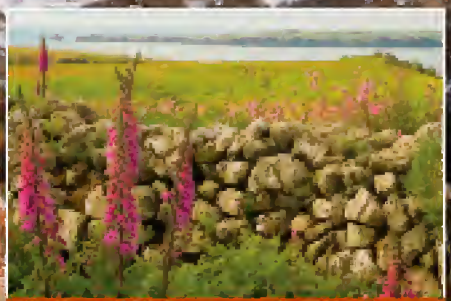
Mandy Marsh

Golden hair lichen • *Teloschistes flavicans* • Cen eurwallt



Gwynfor Ainscough

Sea Bindweed • *Convolvulus soldanella* Taglys Arfor

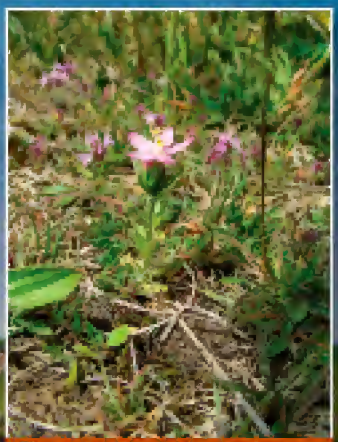


Mike Alexander

Foxglove • *Digitalis purpurea* • Bysedd y cŵn

Ar fin y môr

Ar y tudalennau canol hyn ceir enghreifftiau o fywyd gwyllt y gallech ddod ar eu traws wrth ymyl neu o fewn pellter cerdded rhwydd i Lwybr yr Arfordir – sef testun aml i erthygl yn y rhifyn hwn. Mae hanes a daearyddiaeth y wlad, yn ogystal â diwylliant a seicoleg ei thrigolion o bosibl, yn ychwanegu ystyr, cyfleoedd a hunaniaeth at ei ffin â'r môr. Mae amrywiaeth, llawnder ac arbenigrwydd ei bywyd gwyllt yn rhan bwysig o hyn.



Gaynor Ainscough

Common centaury • *Centaurium erythraea* • Y ganrhi goch

Sam Bryan

Mandy Marsh

Cloddiau carpeted with sea pinks
Cloddiau wedi eu carpedu gyda Chlustog Fair

Mike Alexander

Guillemot • *Uria aalge* • Gwylog

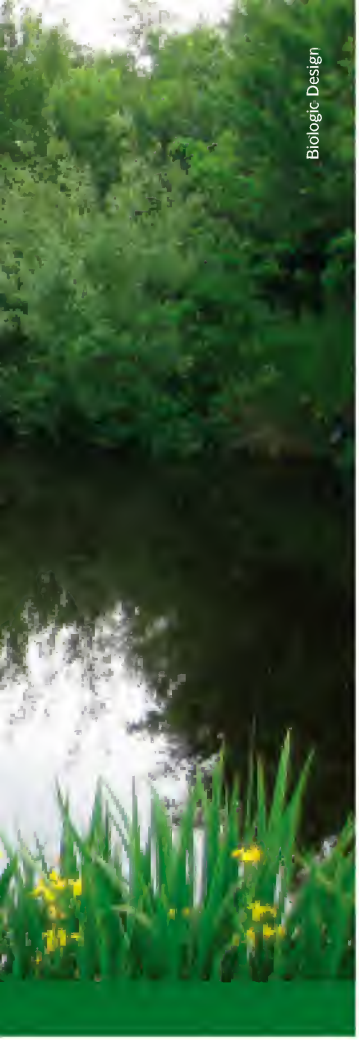
Wet wet wet
at Denmark Farm!

Not your average sewage farm.

Traditional water treatment systems are heavy on the use of materials and energy and cannot be said to work with the grain of nature. If we are not to displace nature entirely, we need to come up with some smart new ways of dealing with human waste. ANGIE POLKEY describes a ground-breaking project in Ceredigion which has put into practice a pioneering solution.

The capacity of natural processes to renew and clean water is amazing. Soil filters water on its way to wells and springs, plants and micro-organisms act as biological purifiers and, in turn, people benefit from free 'ecosystem' services. At Denmark Farm Conservation Centre (DFCC), near Lampeter in Ceredigion, we are harnessing these natural attributes to create a biodiverse, multifunctional Wetland Ecosystem Treatment (WET) System.

Our story begins, as is often the case, some time ago. In 2004, DFCC's aim to promote sustainable habitat creation and restoration prompted my interest in an RSPB proposal to review, trial and assess the costs of creating various farmland wet habitat features. This whetted (!) my appetite and, in 2008, I attended a Flora Locale course on Constructed Wetland Systems, led by Jay Abrahams of Biologic Design. The day was inspirational – we visited a cider factory, B&B business and a plant nursery, each with a different scale of WET system. As a sustainability practitioner and trainer, I was hooked!


Biologic Design

The opportunity to put this research into practice came when Denmark Farm started to plan new, eco-friendly guest accommodation. The expected additional sewage loads would put our existing septic tank under enormous strain and the County Council and Environment Agency were concerned – as were we – to ensure that the new development did not pollute water courses or groundwater. A WET System, which harnesses the innate ability of natural wetland ecosystems to absorb and transform the organic nutrients found in wastewater and convert these into plant biomass and soil, seemed to be the answer.

Unlike reed bed systems, the WET approach creates a soil-based, horizontal flow wetland, made up of a series of specially designed and constructed earth banks and ponds. As the wastewater flows through these soil banks, it is both purified by microbial action and transpired by growing plants. The ponds and banks are densely planted with a wide range of aquatic and marginal plants, including a variety of willow types and other wetland species. This results in a beautiful, species-rich wildlife habitat with resources that can be harvested for a range of purposes. Sounds perfect for a biodiversity and sustainability centre such as Denmark Farm, whose philosophy is to work with, rather than against, nature.

However, this approach was new to our region: ground-breaking in both the physical and

Biologic Design

Mature systems support a wealth of biodiversity

metaphorical sense. Our WET System is the first in Ceredigion and one of only a few in Wales so far. Lack of familiarity with and experience of a new 'technology' can breed suspicion – will it perform as well as more mainstream alternatives? Fortunately we were able, with Jay's help, to convince the authorities that a WET system was not only perfectly suited to our site (which has a relatively impermeable clay substrate) but also the only fully sustainable solution.

Unique features

The system has many unique features. Primary, secondary and tertiary sewage treatments are all in one system (unlike other plant based, reed bed or facultative pond systems). There is no need for a piped outfall, as soil-based absorption and filtration uses the root zone. Treatment capacity is dependable and more robust than reed bed systems. There is little embedded energy - no gravel or plastic aeration/distribution pipes, so no quarrying and far

Preparing the ground

DFCC

DFCC

The WET system before planting

less fossil fuel use for transport and construction. It requires minimal maintenance, has an unlimited lifespan, and does not use electricity, which makes it cheap to run. In fact efficiency increases as the system matures - new soil builds up and root systems extend, both of which also increase biological carbon storage. The icing on the cake is that multi-species wetland plantings create biodiverse habitats. There is even potential income from the sale of willow and associated products, training courses and demonstration days; biomass fuel is also possible, depending on tree variety and cutting rotation.

Furthermore, as Denmark Farm is a training and educational demonstration site, our WET system will be used as a working example of sustainable wastewater purification – a living educational resource to show statutory bodies, trainees and visitors the potential for farms and other businesses which have liquid organic waste to treat. In particular, we hope that turning a 'problem' into a (cost effective) solution, as promoted by permaculture practitioners such as Jay, will inspire farms to become more wildlife-friendly in the future.

Having established the system's sustainability, appropriateness and affordability, and gained the necessary permissions, we were ready to go. More importantly, we had the UK's premier WET system designer and installer on board. Biologic Design (BD) was established in 1993 and has created installations for domestic sewage schemes, an environmental education centre, a field studies centre and a farm hosting a 20,000 strong annual festival. They have also been contracted to a piggery, creamery, livestock market, free-range egg production unit, kennels, dairy farms, cider mills and a micro-brewery. Their 'agro-industrial' WET Systems purify wastewater of between 20 to 50 times the strength (measured as Biological Oxygen Demand) of domestic sewage.

Earthworks begin

So, eco-credentials in place, and after much careful planning, negotiation and fundraising, the earthworks began in late summer 2011. As an additional 'belt and braces' precaution to prevent any water pollution, the first inlet pool (which receives sewage effluent) and the adjoining two 'swales' (shallow ditches on contour) were lined with geosynthetic clay liner. Furthermore, due to the shallow nature of the clay subsoil and rocky substrate, excavations were never more than 1 metre in depth. Locally supplied straw and wood chip were used to mulch the site and a local contractor installed rabbit and livestock fencing – no burrowing, wallowing, drinking or swimming allowed!

The willow setts were planted in February 2012 and, following consultation with Countryside Council for Wales staff about species choices, the wetland

Biologic Design

A working WET system at Westons Cider, Herefordshire

herbaceous plants went in last spring. We were especially keen not to include anything that was inappropriate for Ceredigion and, as the long term Denmark Farm grassland restoration experiment has a 'no introductions' policy, we restricted the types of plants that could be introduced to the WET system. We have also left the lower areas largely unplanted to allow natural colonisation from the existing flora to be observed. In future years – if Jay's pictures of other sites are anything to go by – we will have an amazing sight to behold, with plants and wetland wildlife in abundance.

As well as representing sustainable design in practice, our WET system also marks the start of a new era for Denmark Farm Conservation Centre. The new self-catering eco-accommodation will be ready from early 2013 for anyone who wants to visit west Wales. As well as using sustainably sourced timber, it'll have biomass heating, rainwater collection, solar-powered electricity and heaps of sheep's wool insulation. The surroundings will also feature a range of provision for bats, birds and other creatures – plus a natural play area for human wild-life! A special programme of events and courses, coupled with the site's unusual structures and interpretation, also add to the intrinsic appeal of this wonderful natural asset in the heart of Ceredigion.

Dr Angie Polkey *is Senior Project Officer at Denmark Farm Conservation Centre and this article draws on the expertise and information provided by WET system designer and installer, Biologic Design.*

See **www.denmarkfarm.org.uk** for more details.

The WET scheme has been possible through a grant from the Ceredigion Social Enterprise Growth Fund, administered by Ceredigion County Council on behalf of the Adfywio Ceredigion Regeneration Partnership and supported by the European Regional Development Fund (ERDF) through the Welsh Government. Many thanks to these and all our other supporters and volunteers.

Gwylio adar ar lwybr arfordir Cymru

John Bowers

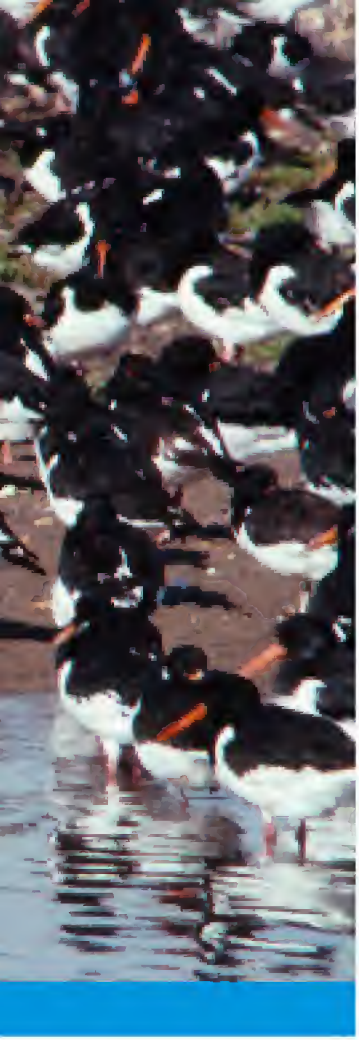
Pioden Fôr • *Haematopus ostralegus* • Oystercatchers

Ar hyd Llwybr Arfordir Cymru ceir llu o safleoedd gwych i wylio adar. Yma mae ***KELVIN JONES*** *yn disgrifio rhai o'r cynefinoedd toreithiog o adar y gellir eu gweld neu fynd iddyn nhw ar hyd arfordir y gogledd, o aber Afon Dyfrdwy yn y gogledd-ddwyrain i Ynys Seiriol yn y gogledd-orllewin*

Mae agoriad llwybr arfordir Cymru wedi creu cyfle ardderchog i adarwyr fynd am dro drwy dirweddau godidog ac ymweld, ar yr un pryd, â rhai o'n safleoedd gorau ar gyfer adar. Mae glannau Cymru'n cynnig golygfeydd gwych i adarwyr sy'n hoff o grwydro - a gall y bywyd gwyllt pluog newid o dymor i dymor mewn sawl man.

Beth am i ni gychwyn yn y gogledd ddwyrain, yn aber yr afon Ddyfrdwy. Yma mae Cymdeithas Naturiaethwyr y Ddyfrdwy yn rheoli darn o dir gerllaw'r hen waith dur, yng nghysgod y pwerdai nwy. Rhaid cael trwydded gan y Gymdeithas os am fynd i'r safle, ond mae'n werth yr ymdrech gan fod y llecyn yn cynnig golygfeydd trawiadol o wahanol rywogaethau drwy'r flwyddyn. Yn yr hydref mae adar rhydio yn heidio i glwydo yma ac fe ddaw llinosiaid y mynydd i lawr i'r aber o'u tiroedd nythu yn ucheldir Eryri. Gallwch fwynhau'r golygfeydd a rhywfaint o fynediad at yr aber hefyd, o gastell y Fflint.

Yn ein blaenau wedyn at geg yr aber, ac fe ddown at safle hen bwll glo'r



Parlwr Du. Yma bydd adar rhydio yn ymgasglu o flaen cuddfan newydd yr RSPB. Lle da i adarwyr a ffotograffwyr fel ei gilydd. Adeg llanw mawr yr hydref yw'r amser gorau i ymweld â'r safle hwn, pan fydd miloedd o adar yn casglu o fewn tafliad carreg i'r guddfan.

Ymlaen at dwyni tywod Gronant. Mae'r twyni'n Safle o Ddiddordeb Gwyddonol Arbennig gydag amrywiaeth dda o blanhigion a dwy rywogaeth o ymlusgiaid. Yn ystod y gwanwyn a'r haf mae'r traeth gro yn gartref i'r nythfa olaf o fôr-wenoliaid bychain yng Nghymru. Roedd y fôr-wennol fechan unwaith yn gyffredin ar hyd traethau gro Cymru. Mae Cyngor Dinbych yn cynnal gwasanaeth warden erbyn hyn er mwyn gwarchod yr adar rhag cael eu tarfu gan ymwelwyr sy'n crwydro'n ddi-hid neu gan ambell berson mwy penderfynol sy'n awyddus i gael golwg agos ar yr adar bychain hyn heb sylweddoli pa mor fregus ydyn nhw.

I'r gorllewin o bont y Foryd yn y Rhyl mae'r llwybr yn arwain yn ôl i ganol cynefin twyni tywod mewn llecyn o'r enw Trwyn Horton. Yma, yn ystod gaeafau diweddar, mae haid o freision yr eira wedi bod yn treulio'r gaeaf. Aderyn trawiadol yw hwn ac mae'n bridio yng Ngwlad yr Ia. Dilynwch y llwybr tuag at Llanddulas ac ar ddiwrnod llonydd mae'n bosib y gwelwch filoedd o fôr-hwyaid duon. Hwyaden fach du yw hon sy'n nythu yn yr arctig pell ac yn dod i dreulio'r gaeaf yn y dyfroedd bas ar hyd yr arfordir. Yma byddant yn byw ar bysgod cregyn bychain.

Gydag ychydig o lwc mae'n bosib y gwelwch ambell fôr-hwyaden y gogledd yn eu plith – bydd y llinell wen ar eu hadenydd yn eu gwneud yn amlwg. Yn ystod blynyddoedd diweddar mae môr-hwyaid yr ewyn, o ogledd America, hefyd wedi bod yn bresennol yma. Mae'n hawdd adnabod y rhain, gyda'u pigau mawr a'r smotiau mawr gwyn ar eu pennau.

Draw i'r gorllewin eto, ac mae pentiroedd calch y Gogarth a'r Gogarth Fach yn amlwg. Yma mae tclogfeini calch Clwyd yn cychwyn ac yn ymestyn mor bell â Llangollen ar gyrion y Berwyn. Dewch yma yn yr hydref ac fe gewch flas ar gynnwrf y cyfnod mudo. Bydd adar gwahanol i'w gweld yn cyrraedd o gyfeiriad y môr ac yn mynd yn eu blaenau tua'r de wrth ddilyn eu hen lwybrau tymhorol. Yn yr haf mae'r clogwyni'n brysur gyda'r adar môr sy'n nythu ar y creigiau.

Ni fyddai'r un daith ar hyd llwybr arfordir gogledd Cymru yn gyflawn heb ymweld â gwarchodfa'r RSPB yng Nghonwy. Crëwyd y warchodfa o'r gwastraff a ddaeth o'r twnneli mawr a gloddiwyd o dan aber yr afon Conwy er mwyn gwella'r A55 nôl yn y 1980au.

John Harding

Pâl • *Fratercula artica* • Puffin

Ymddiriedolaeth Natur Gogledd Cymru

Crehyrod bach yng Ngwarchodfa Natur Aberogwen (y Spinnies) ger Bangor
Little egrets at the Spinnies Nature Reserve near Bangor

Erbyn hyn mae'n datblygu i fod yn warchodfa arbennig sy'n ddelfrydol ar gyfer adarwyr newydd a phrofiadol fel ei gilydd. Mae presenoldeb siop a chaffi'n golygu bod y llecyn yn boblogaidd gyda theuluoedd sy'n dod yma i ryfeddu at y warchodfa a chael dysgu mwy am adar gan y staff croesawgar. Rhwng Llanfairfechan a Bangor mae Traeth Lafan yn ymestyn ar hyd y glannau. Mae'r ardal hon yn cael ei gwarchod yn arbennig ar gyfer ei bywyd gwyllt ac mae'n ymestyn o geg yr afon Conwy at geg y Fenai ym Mangor a draw at Ynys Seiriol oddi ar arfordir Ynys Môn. Mae'r dyfroedd bas uwchlaw'r ehangder o dywod a llaid yn denu piod môr ac adar rhydio eraill dros y gaeaf, yn ogystal â throchyddion. Mae promenâd Llanfairfechan yn un o'r llefydd gorau i weld y dair rhywogaeth o drochyddion ac efallai mai hwn hefyd yw un o'r safleoedd a ddefnyddir yn fwyaf rheolaidd gan yr wyach gorniog. Y tristwch yw mai dim ond yn y gwanwyn y bydd yr wyach gorniog yn datblygu'r cyrn oren llachar ar ei ben, fel rhan o'i wisg fridio; yn ystod y gaeaf mae'n edrych yn debyg iawn i'w gefnder, yr wyach yddfddu. Ond os bydd yr adar yn hwyr yn cychwyn mudo mae'n bosib y byddan nhw wedi dechrau bwrw plu a newid i'w gwisg wanwynol unwaith eto cyn dechrau ar eu siwrnai tua'r gogledd - felly mae'n werth edrych yn ofalus am y cyrn bob gwanwyn.

Mae'r llwybr wedyn yn dilyn yr arfordir at warchodfa Glan y Môr Elias sy'n cael ei rheoli gan Ymddiriedolaeth Bywyd Gwyllt Gogledd Cymru. Dyma safle arall a grëwyd allan o'r sbwriel a adawyd ar ôl adeiladu'r A55 newydd. Heddiw mae sawl cuddfan yn sefyll ar gyrion llynnoedd bychain ac yn y gwanwyn fe welwch gornchwiglod yn rheolaidd yn dawns-hedeg a chwibanu uwchben. Unwaith roedd y gornchwiglen yn aderyn cyffredin ar diroedd fferm Cymru, ond mae eu niferoedd wedi dirywio dros y degawdau diwethaf, ac oherwydd hyn dim ond mewn ambell lecyn fel hwn y gwelwn yr adar hyn yn arddangos bob blwyddyn. Yng ngheg yr afon Ogwen mae gan yr Ymddiriedolaeth warchodfa arall, sef gwarchodfa Aberogwen neu'r "Spinnies". Llyn bach hallt hefo hesg o'i amgylch yw hwn. Daw nifer o adar yma i glwydo ar adeg llanw uchel. Mae'n lle bendigedig i weld glas y dorlan neu, yn ystod yr hydref, rhai

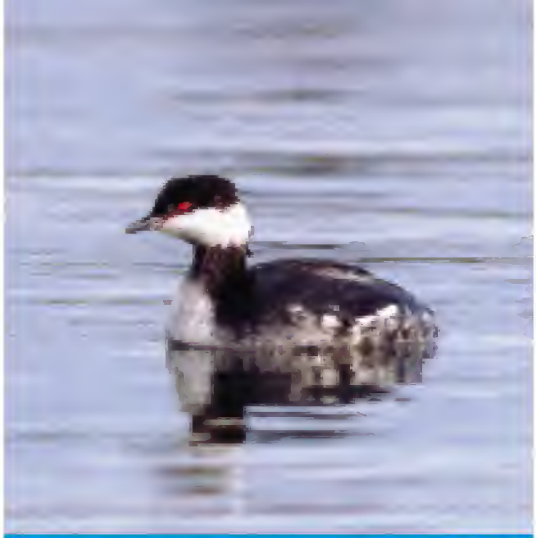
Mandy Marsh

Traeth Lafan: mae cuddfan Aberogwen (y Spinnies) i'w gweld ar y lan
Traeth Lafan: the Spinnies hide visible on the shore

John Harding

Glas y dorlan • *Alcedo atthis* • Kingfisher

Tommy Holden



Gwyach gorniog • *Podiceps auritus* • Slavonian Grebe

cannoedd o grehyrod bach gwyn yn clwydo ar lan yr afon. Mae'n anodd credu y byddai gweld un o'r crehyrod bach tlws yma wedi creu'r fath gynnwrf ymhlith adarwyr nôl yn y 1990au. Erbyn heddiw maen nhw'n nythu yng ngogledd Cymru ac i'w gweld yn rheolaidd ar ein haberoedd. Mae astudiaeth modrwyo wedi dangos bod y cywion yn symud i'r gogledd o fewn ychydig wythnosau ar ôl gadael y nyth – heblaw am yr un unigolyn a welwyd yn Nhenerife gan fyfyrwyr o Brifysgol Bangor yn ystod gaeaf drwg 2009!

Ar ôl croesi'r Fenai i Ynys Môn awn ar hyd y llwybr tua'r dwyrain nes i ni gyrraedd Penmon. Mae trwyn Penmon yn gorwedd gyferbyn ag Ynys Seiriol lle mae 'na gasgliad o adar môr gwahanol. Nôl yn y 90au sefydlwyd cynllun i wenwyno'r llygod mawr a oedd wedi hen sefydlu ar yr ynys ar ôl i long gael ei dryllio ar y creigiau. Fe wnaeth y llygod lanast mawr o'r adar môr ac mi orffennodd y pâl nythu ar yr ynys. Roedd y cynllun difa llygod mawr yn llwyddiant mawr a bellach mae niferoedd yr adar môr ar gynnydd a'r pâl wedi dychwelyd. Y ffordd orau i ymweld â'r ynys yw ymuno ag un o'r teithiau cwch sy'n gadael Biwmares drwy gydol yr haf ac yn cylchu'r talp hwn o graig. Nid oes mynediad cyhoeddus i'r ynys – ac oherwydd hynny mae'r adar yn cael llonydd i nythu.

Dechreuais ysgrifennu'r tamaid hwn fel disgrifiad o daith adaryddol ar hyd llwybr arfordir Cymru. Ond yn yr erthygl fer hon ry'n ni ond wedi llwyddo teithio o'r Ddyfrdwy i Ynys Seiriol. Bydd rhaid i weddill ein taith – o gwmpas arfordir Môn a Phen Llŷn ac i lawr drwy Borthmadog i Dŷ Dewi, ac yna draw at aber godidog yr Hafren - ddisgwyl am y tro. Gobeithio, serch hynny, 'mod i wedi llwyddo rhoi blas o'r wledd adaryddol y gallwch ei mwynhau yng ngogledd Gymru.

Cyn-heddwas a gwyliwr adar brwd yw ***Kelvin Jones****. Fel modrwywr adar, mae'n canolbwyntio ar adar ysglyfaethus, golfanod ac adar hirgoes sy'n dod yma i dreulio'r gaeaf.*

Birdwatching on Wales' Coastal Path

The Wales Coast Path gives access to a string of outstanding sites for bird-watching around the north Wales coast. Starting in the north east, the mud flats of the inner Dee estuary in winter attract large numbers of waders of many species, and Point of Ayr is a good place to watch and photograph waders. Further west, there are dunes noted for breeding Little Terns, and wintering Snow Buntings. Ducks which winter close to the coast include Common and Velvet Scoter. Other hotspots for bird-watching include the Great Orme, the promenade at Llanfairfechan, Traeth Lavan, the Spinnies Wildlife Trust reserve, home to a large colony of Little Egrets, and Ynys Seiriol/Puffin Island off the Anglesey coast, where Puffins are at last returning.

Snow on a Raven's Wing

Natur Cymru *writing competition runner up.*

Leaving Nant Ogwen in late autumn there is a chilly north wind, but the blue sky and warm sun are reassuring. I trudge upwards, past a lone holly tree covered in red berries and head towards the peaks of Carneddau, through a landscape of names resonating with mythology and history. The sound of traffic on the A5 soon fades as Afon Lloer pours and roars through rocks towards Llyn Ogwen. On the other side of the ancient volcanic valley Tryfan's triangle pierces a blue sky, appearing like a Himalayan pinnacle. Only through my camera lens can I catch a glimpse of matchstick people, perched Lowry-like on the summit, bent into the wind high above the domestic valley floor below.

Amazingly in the bronzed autumn vegetation of matt grass amid mossy sponges, radiate studs of deep blue milkwort, as confident as in the heights of summer. The top of the ffridd is marked by the great stone wall of Carneddau, winding its way along precarious contours over streams, rock screes and moorland. A stile lifts you into open country and up towards my destination, the lake of Ffynnon Lloer, the Well of the Moon. The landscape seems eerily quiet, with no wren, stone- or whin- chat alarm calls. Higher up, as if to mark the open hill, ravens, the guardians of Carneddau appear, luxuriating in their knowledge of the landscape, flying with occasional resonating, reverberating honks. Looking to the south east, the eruption of Snowdonia calms into the comparative lowlands of Denbighshire which retain sunlight, whilst I disappear under fast moving, blown from the north, clouds.

Liz Fleming-Williams

Mountain tarn lichen *Lecanora achariana*

I reach the lake, one of the few remaining truly natural lakes in Snowdonia: no dams or sluices, only natural water levels. Hailstones, archiving weather from earlier in the day, cluster amongst the rocks around the lake. Pen Yr Ole Wen, the Head of the White Slope, soon lives up to its name with more relevance than I had expected, as the seventh highest mountain in Wales is shrouded in swirling clouds which plunge over the precipitous cliffs towards me in Cwm Lloer. Icy snow tinkles on the rocks and water surface, appropriate for this glacial lake.

Tryfan and Llyn Ogwen

Immediately I find what I am looking for. On the occasionally submerged rocks of the lake that provide just the right humidity and alkalinity is *Lecanora achariana*, the mountain tarn lichen. The Welsh for lichen is descriptive: cen y cerrig, skin of the rock. This lichen is part of the texture, the colouring of the rocks: a moon-like, yellow-grey lobed skin. It is a demanding lichen that finds suitable habitat requirements at only six sites in the British Isles. The stunning mystery of lichens, an association of a fungus and alga, is reflected in their precisely tuned habitat needs. The mountain tarn lichen has as its associates circles of other lichens, mosses and liverworts – which shuffle around each others needs, maybe taking decades to resolve and define their own micro habitats, appreciating the north wall which shades one weather system, whilst luxuriating in the southern aspect of this highland lake.

Solo ravens fly past, the calls echoing, bouncing off Yr Ole Wen. Gusts of snow transform the cwm from autumn to winter. The rocks are strewn around the lake's edge in a casual cascade as if the glacier left last year, not 10,000 years ago. How long did it take the rare mountain tarn lichen to colonize after the ice melted? Was it here when the Iron Age people moved over these mountains? Did they find the Parsley Fern sheltering in the small rocky caves? We have been recording these ferns, lichens and plants for a remarkably short time. Now some are called Section

PRIFYSGOL
BANGOR

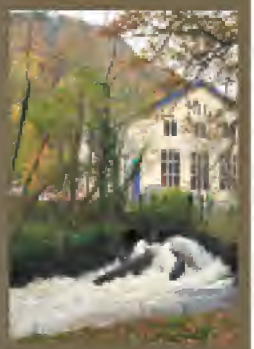
MSc / MA
Rheolaeth Amgylcheddol Gynaliadwy

Diddordeb yn ein dyfodol?
Chwilio am waith ym myd cadwraeth a'r amgylchedd?
Profiad eang o waith perthnasol?
Angen hwb i'ch gyrfa?
Am astudio drwy gyfrwng y Gymraeg?

Mae'r cwrs meistr cyfrwng Cymraeg unigryw hwn wedi ei anelu at fyfyrwyr sydd â diddordeb gwirioneddol mewn datblygu cynaliadwy a materion amgylcheddol.

Byddwn yn croesawu ceisiadau gan raddedigion o bob maes. Rydym hefyd yn awyddus i dderbyn ceisiadau gan bobl sydd heb radd ond sydd â phrofiad a chefndir perthnasol.

Mae galw cynyddol gan gyflogwyr yng Nghymru am bobl sydd nid yn unig gyda'r cymwysterau amgylcheddol perthnasol, ond sydd hefyd yn gallu trin a thrafod y maes allweddol hwn trwy gyfrwng y Gymraeg



Gorsaf Bwer Hydro Maentwrog - bydd defnydd effeithiol o'n adnoddau dwr yn allweddol ar gyfer y dyfodol.

- **Gwaith Maes**
- **Lleoliadau Gwaith Proffesiynol**
- **Astudiwch yn llawn amser dros flwyddyn neu'n rhan amser dros ddwy flynedd**
- **Cymorth Ariannol ar gael drwy gynllun noddi'r Coleg Cymraeg Cenedlaethol**
- **Cymwys ar gyfer Ysgoloriaethau Aur ac Arian**

Manylion Pellach

Am wybodaeth bellach cysylltwch â'r canlynol yn Ysgol yr Amgylchedd, Daearyddiaeth ac Adnoddau Naturiol, Prifysgol Bangor, Bangor, Gwynedd, LL57 2UW.

Paula Roberts, Cyfarwyddwr y Cwrs
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Neu ewch i'n gwefan:

www.bangor.ac.uk neu www.senr.bangor.ac.uk

42 species – the mountain tarn lichen is one of them – and hope they will gain our respect. We still splatter them with acid rain, have over-grazed, and ravished their habitats. Maybe one day, when we are less hubristic in our superficial analysis of the natural world, we will appreciate their needs, value their worth and treat these organisms with more respect.

Meanwhile snow wraps the auditorium in a white veil and glancing up, right up, to the top of the scree, I can just see a flock of birds, blown along on the north wind. Is it golden plovers or dotterel seeking their winter retreat from Russia? I wonder where the wheatears are. They studded these slopes only a few weeks previously, and now.....on a dry stony slope on the African continent? I compare wheatear fuel, the insects in this wilderness, with that of the snarling training aircraft steering their way up the valley hundreds of feet below me, consuming fuel, consuming silence. When I emerge from my circuit of the lake, the snow clouds abate. As if I dreamt this magic place, I close the imaginary door and hope to return one day. Following the descent of the young Afon Lloer, I glance across at Tryfan where a mysterious mist encircles the mountain's northern rim like a volcanic message. Above the Devil's Kitchen a similar plume emerges. Shafts of late evening sun pierce through the mist and light up the sheer rocks of Tryfan. Contours of mountain calls transcend from raven to robin. I descend towards the sounds that synchronize with the road. The motorbike first – a time-delayed acceleration as it overtakes a bus.

Arriving back at the car in winter I head home around the crags and lakes of Eryri and see the other definer of time, a full moon, floating above Capel Curig. I imagine its light reflected in Ffynnon Lloer, the Well of the Moon. The ripples of the lake dance with the moon's reflections hours after melting the first snowflakes of winter. Water laps quietly around the boulders of the moon-like mountain tarn lichen, celebrating one of the last truly wild places in Wales.

Liz Fleming-Williams

All photos: David Perrott

Just do the walk

and write about it...

The network of rights of way shown on maps does not always translate into accessible footpaths. This brings headaches for those trying to write about good routes for walkers. Although the potential is great, reality lags some way behind, as DAVID PERROTT explains.

"I love walking. I'd love to get paid for it. You must have the best job in the country!" Well yes, perhaps, maybe, but it's really not quite as simple as you imagine. Bear with me.

Kittiwake-Books started out as a favour to a friend way back in the last century (OK... 1998). He was a far more enthusiastic walker than me, and thought that the great potential around Machynlleth for walkers needed to be brought to the world's attention. We had spent many years involved with guidebook publishing so he approached us, and soon the Kittiwake walking-book concept began its evolution. This first production sold out in a few weeks, and a reprint soon followed (and revised and updated it's still going strong). Then a friend of his, who lived in Dolgellau, also an avid walker and prompted by this initiative in Machynlleth, felt the urge to compete and wrote a similar guide to that town. This was duly published and is also still going strong, also revised and expanded, and remains one of Kittiwake's best sellers. These two guides were then noticed by yet another keen walker in north-east Wales who compiled his own guide using our format, and gradually the list of titles grew. There will soon be over sixty of them.

Footpath maintenance

Prior to this I had written and edited a few books and, finding myself with a light workload for a month or two, decided to write a Kittiwake guide myself and produced *Walks Around Porthmadog & Ffestiniog*, which brings me finally to the point of all this history. Kittiwake has now grown to provide the major part of our income, so we thought we would take this opportunity to research and write another guide, covering an area in Montgomeryshire which has great walking potential but barely gets a mention. Twenty prospective routes were sorted out and the on-site research began. The first walk went well – quiet undulating countryside, great views and a handsome and historic church – until the last part of our planned route became impassable. But we salvaged the walk by foreshortening it and all in all it remains well worthwhile.

The second walk, in the close vicinity of an historic venue, went without a hitch. The third route, starting from an upland nature reserve began well. The paths were rough and little-used but were easy to follow – until we arrived at a missing stile two-thirds of the way around. We managed to avoid retracing our steps by making a diversion off the right of way, rejoined it further along and completed the circular walk back to the start. That was now two out of three walks with major problems. The missing stile was reported to the relevant footpaths officer and hopefully the problem will be resolved eventually, although given council budget restraints this may well not happen in the foreseeable future. If this average is maintained then 13 or 14 of our planned routes may be obstructed. You can see it is easy to lose heart.

Rights and responsibilities

Taking a broader view, I think it is worth remembering that those hatched green lines which you find on Ordnance Survey Explorer maps are 'Public *Rights* of Way' (RoW) – in other words you have the same right to follow a RoW as you have to walk along your local high street. While I understand that local authorities are short of funds which would enable them all to be opened, I do not understand why landowners need to be consulted in this regard. The law, in outline, states that the landowner is responsible for keeping routes free from obstruction and for maintaining gates and stiles, whilst the highway authority is responsible for keeping them in good condition, and signing and waymarking them. If that's the law, it should be adhered to by both parties.

Which brings me to the Wales Coast Path, which those in authority claim to be open throughout, but which other feedback we have received seems to imply this isn't quite true. I haven't walked it, so I can't really say one way or the other. But assuming you could walk the whole route, you still can't always follow the *preferred* coastal line – the Cardigan Island Farm Park just north of Cardigan being a case in point. Since there is no RoW indicated along the coast at this particular location, the land-owners, having been given permission to open the farm park in 1992 without a RoW through it, in my opinion remain quite within their rights if they wish to deny the path access – after all, further north the route carefully avoids passing through the italianate village of Portmeirion.

To someone not intimately involved in the argument it does seem odd that while walkers can apparently be trusted to follow the South West Coast Path, or the Pembrokeshire Coast Path, without falling off cliffs, entering tourist attractions without paying, trespassing or frightening sheep, once they cross the

border into Ceredigion their behaviour is thought to change. But is it the walkers who change, or the attitudes of some landowners? Perhaps everyone involved in the Wales Coast Path needs to modify their attitude.

A recent holiday in the Lake District gave us a glimpse of how things could be throughout Wales. It is clearly, in tourism terms, a prosperous area where all paths seem to be open and waymarked, and yet farmers appear to happily co-exist with this. Perhaps they realise that attracting visitors, who bring their wallets with them and are quite happy to open them, sustain accommodation providers, craft shops, tourist venues and many other sources of employment and income, going some way to alleviating the lack of manufacturing jobs there.

Tourism is now considered to be an industry, and everyone in Wales should whole-heartedly embrace this concept. This beautiful country has such great potential for outdoor activities and the enjoyment of the natural world for all age groups and yet, taking walking as just one example, at present it never quite lives up to expectations.

If you enjoy walking in Wales, visit www.kittiwake-books.com to see their complete range of guides, which cover most of the country.

David Perrott *founded Kittiwake Books (see box).*

Kittiwake publishing has its origins in the late 1960s, when a guide book which David Perrott co-designed became the first publication to be featured in the original London Design Centre. Following this he worked on many other books, both as designer and author, including a guide to Edinburgh and The Shell Guide to the Western Islands of Scotland. He was also, until recently, editor of the Nicholson Waterways Guides.

Having decided to live in Mid Wales with his wife Morag, an illustrator, they both became increasingly involved in local projects and eventually decided to start producing their own series of local walks guides in 1998, under the Kittiwake imprint. From quite a modest beginning, since other commissions – cartography for the Good Beer Guide, the Good Hotel Guide, the Good Pub Guide, along with a wide variety of graphic design work and researching and writing the National Trail Guide to Glyndwrs Way – took up a great deal of time, the Kittiwake list has now grown to almost 60 titles, with more to follow.

With their wholly practical and easy-to-use approach, clear mapping, colourful covers and very competitive prices Kittiwake guides describe a wide range of walking opportunities throughout Wales.

50 Years Ago

Some Welsh Marsh-orchids

Exactly fifty years ago R H Roberts, the BSBI's referee for Marsh-orchids (Dactylorchids), published an article in *Nature in Wales*. He described a new, third population of a marsh orchid recently discovered in Caernarfonshire, the Broad-leaved Marsh-orchid. The previous year he had published two important scientific papers on Marsh-orchids in *Watsonia*, the BSBI's journal. In the second paper, he had described the findings of a biometric study of two populations of Marsh-orchids in Wales, one at Ynyslas, Cardiganshire, the other at Newborough Warren on Anglesey. By collecting detailed measurements of flower and leaf characteristics, he demonstrated that these two populations belonged to *Dactylorhiza majalis* (Broad-leaved Marsh-orchid) and he gave them a subspecific status, *Dactylorhiza majalis ssp. cambrensis*. Now he was able to fill a gap in the Welsh distribution.

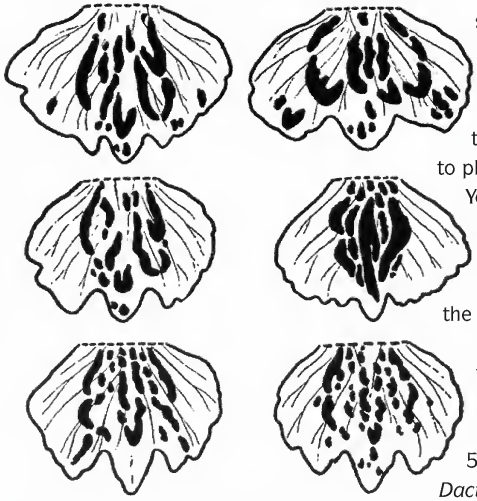
Thirty-five years ago, I went to Ireland with a couple of friends who were collecting biometric data on this confusing group of 'tetraploid' Dactylorchids. We hoped to find a new subspecies or two, perhaps even a new species! It was an enjoyable and productive trip. The computer that crunched the data on petal width and length, number of bracteoidal leaves, markings, leaf shape and so on, produced a series of peaks blending into each other – a continuum – so that even existing species, like the Narrow-leaved Marsh-orchid, didn't look quite so distinct. We fell back on the thought that these orchids were still in a state of active evolution, not even knowing who they were themselves. After all, botanical names are only labels to help humans differentiate between plants, so we shouldn't get too serious about them.

My friends, Richard and Ian, wrote up their findings and the draft

Gaynor Ainscough

Northern Marsh orchid *Dactylorhiza purpurella*

Some labellum shapes and patterns from the Glaslyn colony of *Dactylorchis majalis subsp. Cambrensis.*



paper went to R H Roberts, who was not impressed. It was the young Turks versus the Establishment. After a considerable delay the paper was published and the world didn't come to an end. Another ten years on, I'm sending my children to the school where R H Roberts had been headmaster. I now know that he made an impressive contribution to botany and in particular to plant recording on Anglesey. Years pass, and Richard's DNA work on orchids leads to a reclassification, putting Frog Orchid into the Dactylorchids, for example. So here am I, reflecting on the changes that have occurred since R H Roberts wrote his article 50 years ago. His *Dactylorhiza majalis ssp. cambrensis* has become a variety of the Northern Marsh-orchid, and its subspecies, *occidentalis*, has been split into two full species, the Irish Marsh Orchid and the Hebridean Marsh-orchid. The Narrow-leaved Marsh-orchid has clung onto its full species status. The books still tell us that this is a really challenging group of plants which botanists cannot agree about. My visits to various Welsh Marsh-orchid hot spots in early summer allow me plenty of scope for confusion. Perhaps it reflects my inadequately rigorous approach to botany! I am happy to enjoy the journey, rather than fret about the destination. I like the idea of science as a product of curiosity, rather than the path to certainty. Now I know more about R H Roberts' confusing Marsh-orchid, but I remain confused. Plus ca change, plus c'est le meme chose. How about the young Turks? Richard Bateman became a Professor of Botany at Kew. Ian Denholm is about to become the BSBI's next President!

James Robertson

Canolfan Parc Cenedlaethol Eryri • Snowdonia National Park Centre

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Afforested Deep Peats in Wales

The deep peat areas of Wales are highly valued for biodiversity and for delivering a range of ecosystem services including biodiversity, carbon storage, regulation of stream base flows and nutrient regulation and retention. They are also sinks and sources of several natural greenhouse gases, particularly carbon dioxide (CO_2) and methane (CH_4). It is estimated that deep peats cover 116,400 ha of Wales, which is approximately 5.6% of the total land area. It is important that these areas of deep peat are protected from degradation, and that existing degraded deep peats, such as those which experienced historic afforestation, are considered for restoration to mire habitat.

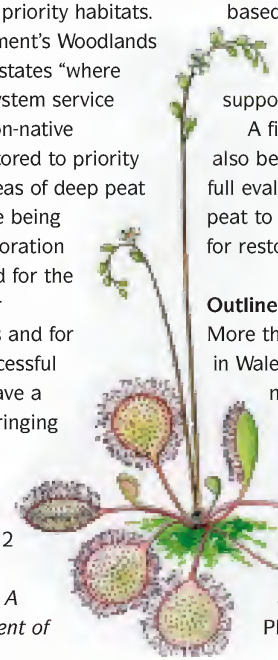
There is a strong policy presumption against permanent removal of woodland except for the restoration of high priority habitats. The Welsh Government's Woodlands for Wales strategy states "where there is clear ecosystem service benefit, existing non-native woodlands are restored to priority open habitats." Areas of deep peat (> 50cm) which are being considered for restoration should be assessed for the potential to deliver ecosystem services and for the viability of successful restoration, and have a positive plan for bringing the habitat into favourable condition.

In October 2012 Forest Research published a report *A Strategic Assessment of the Afforested Peat Resource in Wales*. This work was jointly commissioned by Forestry Commission Wales, Countryside Council for Wales, Environment Agency Wales and the Welsh Government.

The report assesses the distribution of the Welsh peatlands, based on best available spatial information on the extent and location of peat soil and peatlands. It includes an improved distribution map of the upland blanket peat and deep peat soils resource, and maps afforested deep peats and the ownership of forested land in Wales. It also identifies potential restoration areas, with the relative costs of afforested peat restoration.

Across the Welsh Government Woodland Estate (WGWE) deep peat sites are now identified, and a map-based national assessment including priority scoring is available as a decision support tool for managers.

A field assessment tool has also been developed, which allows full evaluation of areas of afforested peat to determine their suitability for restoration.



Outline findings

More than 75% of deep peat soils in Wales are covered in semi-natural vegetation. Most of this is upland blanket bog, with significant amounts of fen and flush and, locally, lowland raised bog. These are all UK Biodiversity Action Plan priority habitats with UK and Welsh targets for habitat management and restoration. In this project it has been estimated that there are 18,092ha of woodlands established on deep peats in Wales. Of this area, 11,232ha remains under coniferous tree cover. The Welsh Government owns 11,038ha of the afforested blanket bog and deep peat resource, with 6,592 ha of this under coniferous tree cover, which is managed by Forestry Commission Wales (FCW).

Next Steps

FCW seeks to integrate the key objectives of nature conservation, soil carbon protection, carbon sequestration and water quality.

A programme is to be developed across the WGWE to assess the deep peat and, with the help of the national assessment and field assessment tool, an appropriate management plan will become part of the Forest Design Plan.

Seven of the ten sites which ranked highest in the national assessment are on the WGWE, and these have already been assessed and will be prioritised for restoration works over the next 15 years.

The report, together with guidance on forestry and deep peat and a field assessment scheme, can be found on the Forestry Commission Wales website (Woodlands and Peat page) http://www.forestry.gov.uk/forestry

Dr Helen Cariss
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The 100,000 hectare challenge

Farmers will need to be persuaded that woodland creation and management are a mainstream part of what they do, to help meet the Welsh Government's ambitious policy of substantially increasing woodland cover in Wales. This is one of the main recommendations in a new report *Growing our Woodlands in Wales: the 100,000 hectare challenge*.

If this level of planting is to be achieved, much of it will have to be carried out by farmers who, the report says, are likely to be reluctant to increase the tree cover on their land. Many farmers do not see themselves as woodland managers or foresters. Moreover, there are lower returns on using land for growing trees rather than for grazing or as arable land.

The report's second major recommendation is that the expansion of woodlands will need to take place in the ffridd areas of rural Wales:

If the 100,000 hectare target is to be achieved, areas of unimproved, marginal land across Wales will need to be planted. These are the ffridd habitats where the uplands and lowlands meet. In turn this will require a more holistic approach to the inherent tension between the requirements of sustainability on the one hand and conservation on the other. There needs to be a recognition that new woodlands in the ffridd areas will create new habitats and new biodiversity opportunities.

The report recommends more flexibility in the definition of those parts of the Welsh landscape where tree planting can take place. When it was published, much of rural Wales was in a red zone where planting is not allowed for a variety of habitat and conservation reasons. Other zones are green, where planting is allowed, and amber, where land is regarded as potentially suitable for planting. This 'traffic light' mapping is used to help assess applications to the Glastir woodland creation scheme, and the report called for it to be revisited, in order to achieve a better balance between the demands of sustainability and the conservation of existing habitats.

The Forestry Commission has since revised the map, with some land moving from the 'red' area to 'amber', where consultation about site specific issues is required to decide if woodland creation may go ahead. The consultation process includes contacting relevant organisations and a site visit.

The overall conclusion of *Growing our Woodlands in Wales* is that farmers are more likely to embark on tree planting if they can be persuaded that it can be integrated into their overall farming culture and practice, rather than as a separate activity. This may not be as difficult as it sounds, says the report, and it concludes:

What is required is for farmers to rediscover the practice of a previous era in Welsh farming a few generations ago, when woodland creation and management were seen as an integral part of our farming culture.

***Mary Galliers**, Forestry Commission Wales Marketing Officer.*

Growing our Woodlands in Wales: the 100,000 hectare challenge was published by the Institute of Welsh Affairs with support from Forestry Commission Wales. A copy can be downloaded from the publications section of **www.iwa.org.uk** or requested from **mary.galliers@forestry.gsi.gov.uk**

Farm woodlands provide shelter and shade for livestock

FCW

Taking a closer look at the National Botanic Garden of Wales

"Woof woof." Dr Philip Jones, a retired GP, holds his hand open to me. My myopic eyes make out a white blob. "Woof woof," he repeats and smiles. A small crowd of onlookers shuffle up to get a closer look. Philip wields a pocket knife with his other hand and slices through the blob. Encased inside we see something that looks rather rude. "Dog stinkhorn," announces Philip, *"Caninus mutinus."*

We're here at the National Botanic Garden of Wales for the first ever Wales Fungus Day and already we've found a few fungi we haven't recorded before. There's an unusual looking earthstar (*Geastrum sp.*) that's appeared amongst *Escallonia* bushes in the Chile section of our Great Glasshouse; a milkcap (*Lactarius sp.*) with fiery hot tasting milky juice dripping from its broken gills; and *Niptera ramincola*, a tiny wood rotter that has barely been recorded in Wales before.

Wales Fungus Day gives us a great opportunity to share our enthusiasm for this extraordinary, beautiful and fascinating life form. We've had around 30 people on each of our themed fungal guided walks, each getting the opportunity to touch, smell and hear about the huge range of fungi that fleetingly fruit here every autumn, and to see first-hand how mycelium rots wood and creates fairy rings. We've had to put out extra chairs inside our Theatr Botanica for the talk by Professor Lynne Boddy on 'What We Don't Know About Fungi', a beautifully delivered reflection on the potential for future research and field survey. There have also been stalls by the British Mycological Society, an invitation to woodturn your own model of a fly agaric mushroom (*Amanita muscaria*), the chance to taste shiitake, slippery jack and oyster mushrooms, and the opportunity to enjoy *From Another Kingdom*, Britain's first major exhibition on fungi.

We've also welcomed UK rust expert Nigel Stringer and a bunch of students from Aberystwyth University who have come down to record some of the more obscure or hard-to-identify fungi. In the 1990s, renowned mycologist Maurice Rotheroe made some eye-catching recordings of fungi here. He first 'discovered' the importance of a waxcap meadow on our Waun Las National Nature Reserve as well as

Pam Murden

Jelly-ear *Auricula auricular-judae* on a Ghanaian Wawa tree

Candle snuff fungi
Xylaria hypoxylon
Cyrn gwyn

Darren Boxer

finding a few 'Welsh first' records of webcaps (*Cortinarius sp.*) in our Pont Felin Gat woodland. Since then, we've been fortunate to have the likes of Dr Gareth Griffiths of Aberystwyth University, Lizzie Wilberforce, Debbie Evans, Shelley Evans and Dr Philip Jones adding to Maurice's records. However, there's a huge number of fungi that have yet to be recorded and it's important for us to know what's here in order to monitor changes and to alert us to any conservation measures we may need to make. Fungi in unusual places can be of great interest to visitors, one of whom recently spotted a jelly-ear (*Auricularia auricula-judae*) on the roots of a Ghanaian Wawa tree, part of our recently installed Ghost Forest.

Put October 13th 2013 in your diary as we'll be running the second Wales Fungus Day on that date next year.

Bruce Langridge

Bruce Langridge

Unopened earthstars *Geastrum spp*

Darren Boxer

Scarlet elf cap *Sarcoscypharica coccinea* Cwpan robin goch

Green **Bookshelf**

Fighting for Birds
Mark Avery
Pelagic Publishing
2012
Paperback
£12.99

There are some websites I try to look at every day. One that is always worth reading is Mark Avery's blog 'Standing up for Nature'. A former Director of Conservation with the RSPB, his articles are written with passion and humour, so I was curious to see if he could he sustain his usual quality over 300 pages or more.

The tone is set by the title. This isn't 'Managing for Birds' or 'Caring for Birds' or 'Working-in-Partnership-with-Stakeholders-for-Birds', although Avery does plenty of all three. It's 'Fighting for Birds'. It's 'in yer face' nature conservation. It's assertive, uncompromising and outspoken. Few prisoners are taken.

It starts slowly with chapters describing Avery's youth, and his entry into the RSPB. I warmed to this, if only because his memories of 'Peterson, Mountford and Hollom', 'The Selfish Gene' and 'Bohemian Rhapsody' are mine also. There are chapters on early experiences in the Flow Country and working with roseate terns. You could be forgiven for thinking this is one of those rather worthy 'my life with birds' books.

But it gathers pace with a chapter on the vital importance of sound data for bird conservation, before moving on to nature reserves, climate science, farmland birds and the value of reintroductions. Avery provokes the reader at every turn. Was it right to shoot ruddy ducks? How would a reintroduced white-tailed eagle fare in Norfolk? What was Prince Harry really up to, that evening two hen harriers were shot at Sandringham? Do egg collectors suffer from sexual inadequacy? There's a lot to ponder.

But despite the combative tone, it's Avery's candour that makes him so persuasive. Nobody in nature conservation really thought hen harriers could affect grouse populations. But Avery readily acknowledges that the science is undeniable: they do. As a Labour Party member, he praises Michael Meacher, but also has warm words for John Gummer. The RSPB's experiment with farming has been a qualified success, but far from plain sailing. At every turn he emphasises being honest with ourselves. In an age when, from climate change to badgers, opinion drives evidence rather than vice versa, this attitude is so refreshing it could make you cry.

It would be hard to make any criticism, but the reintroduction chapter makes no mention of the osprey project 20 miles from Avery's home which, incidentally, led to the species breeding again in Wales. The section on politics is also a bit thin. It's so much more complicated than a simple left/right question. What of differing shades, from one-nation Tory to neoliberal Thatcherite? What of the Liberal Democrats, UKIP, the Greens, Plaid Cymru, the SNP, and Northern Ireland parties? Maybe that is another book.

After a delightful 'light relief' chapter of anecdotes (my favourite: the opening "Unleash hell!" scene from the film Gladiator was filmed next to the RSPB reserve at Farnham Heath) the book comes to its conclusion on the future. Whether you agree with Avery's views on a 'super NGO' or not, it's inspiring stuff. His message, that you don't have to be a victim, that if we choose to be passive then we collude in the environment's degradation, is compelling.

If you are a young person, maybe starting out on a career in nature conservation, 'Fighting for Birds' should be in your induction pack. No one, perhaps except Peter Marren, writes better. But anyone who cares about the future of wildlife in Britain should read this book. And if you enjoy it – and I bet you will – there's more at markavery.info/blog.

Andrew Lucas

Wildlife in Trust
Tim Sands
Elliott and Thompson Ltd
2012
779 pages
paperback £25

This is a massive book (it weighs over four pounds) – in natural history terms the same as an osprey, commemorating a hundred years of conservation, a history of the Wildlife Trusts. A history which commenced in 1912 (see Natur Cymru 43, pp 6-10) with the formation of the Society for the Promotion of Nature Reserves (SPNR). In 1915 the fledgling Society published a map of 'sites worthy of preservation', 182 in all. Eighteen of these were in Wales, but there were some notable omissions such as Skomer, which

had been a private nature reserve since about 1900.

The 199 page history section is followed by 391 pages devoted to the forty-seven Trusts, from Alderney to Yorkshire. The individual accounts vary slightly in length; in Wales between six pages for Gwent and ten for South and West Wales. Each begins with a full-page illustration and includes a map showing the location of the Trust nature reserves. Text and photographs follow the same broad theme: a brief description of the Trust area and its establishment and history, and including appropriate tributes to the many honorary officers and other volunteers who pioneered the way before paid staff became the norm.

Some amazing highlights are revealed like the £1 million legacy from Bermuda to the Brecknock Trust. Montgomeryshire, one of the youngest, having been formed in 1981 when it declared independence from the North Wales Trust, was blessed with a similar amount from a hardly known member. Radnorshire, which split off from Hereford in 1987, is the smallest Trust in Wales and shortly after its independence purchased the 383 acre Gilfach Farm. The success of West Wales in raising funds to purchase Skomer in 1958 and Skokholm, which it had leased since 1948, in 2006 followed its long history of involvement with islands, for it leased Cardigan Island in 1944, subsequently purchasing it in 1963.

The third part of the book, some 161 pages long, is a reference section. Of trust personalities and pioneers, sadly, Ronald Lockley, who was so involved in West Wales for over 30 years, has slipped through the net. This section covers campaigns, medals and mergers and much else. A photograph of the Kite Committee in 1964 has William Condry incorrectly described as the founder of the West Wales Trust.

The author and all those who have played a part in bringing this vast book to fruition are to be congratulated, but is there not a sense of over-kill? I fear few readers in Wales will wish to read about, say, the Derbyshire Trust or that in Hertfordshire and Middlesex, any more than readers in those counties will wish to read about Radnor or South and West Wales. Might not a book using the first and third sections and leaving out the individual trusts have a wider appeal? The price would be that much less, not forgetting the weight.

David Saunders

Barn Owl Conservation Handbook
Barn Owl Trust
Pelagic Publishing, Exeter 2012
395 pages
£39.99

Barn owls have undeniable charm. The other night I saw the pale, ghostly outline of a barn owl waft upwards into the night sky, only the third I have seen this year, and each encounter is a memorable moment. Down the centuries they have been the farmer's friend, denizen of his barns. The cat of the sky, a mouser and rat-catcher of brilliance, barn owls attract admiration and affection, sentiments which were behind the establishment of The Barn Owl Trust in 1988, an extremely effective single species organisation.

This substantial book aims to be comprehensive, an indispensable guide for ecologists, surveyors, land managers and ornithologists. At almost 400 detailed pages, it is remarkably thorough. Its nine chapters cover ecology, legal aspects, surveys, habitat creation and management, accommodation for barn owls, mortality, planning issues and injury and rehabilitation. It is full of case studies and practical examples of barn owl conservation in action. For me this is one of the most winning aspects of this book: it keeps the practicalities of barn owl conservation in view at all times.

Inevitably in a book with a number of authors, I found the writing patchy, and some sections were not as engaging as perhaps I would have liked. It is a heavyweight tome at a heavy price, so it will pass by most general readers. But this is a handbook designed to draw together a mass of material in one place, a source of information rather than of bedtime reading. As such it contains a wealth of information of interest to its target audience and beyond. Perhaps also, despite the challenges that humans inadvertently put in the path of barn owl survival, like motorways, it is an uplifting tribute to the energy and commitment that so many people have devoted to the cause of this beautiful bird.

James Robertson

Green **Bookshelf**

Wales at Water's Edge
Images Jeremy Moore
Text Jon Gower
Gomer Press
2012, 160 pages £19.99

The book opens at the south eastern corner of the Wales Coast Path and finishes 870 miles later in the mouth of the Dee. But of course you can start wherever you like in any of the ten segments.

'Photograph' seems such a mechanical word for the fantastic images captured or created by Jeremy Moore: a diverse range of subjects, sometimes from an unusual angle. Lots of natural beauty as you'd expect and ugly things portrayed with panache.

The words by Jon Gower are personal, such as his timely good deed of alerting British Rail to a breached sea wall, thereby averting a disaster, and in reward for which he received *The Collins Guide to British Birds*. Some words are not obvious ....*'this wondrous coast is a place to walk, prog or beachcomb....'?* According to the freedictionary.com, to prog is to prowl about for food or plunder.

Alliteration abounds with the coast described as *'crinkled, crimped, crenellated and corrugated'* – I suspect he wanted to go on to say *'caravanned'.*

There's plenty of humour, and a host of interesting titbits and pictures to inspire – it's a catalyst to get you out walking or indulging in the armchair alternative to the real thing.

Huw Jenkins

CYMRU AR HYD EI GLANNAU
Dei Tomos a Jeremy Moore
Gwasg Gomer, Llandysul 2012, £19.99

Fel y dywed Morgan Parry yn ei Ragair, mae'r llyfr yn ein 'gwahodd' i fynd ar daith o gwmpas llwybr arfordirol Cymru a dyna'n union a welir yn y llyfr, sef amrywiaeth y glannau trwy ddelweddau arbennig gan y ffotograffydd tirwedd Jeremy Moore a phortreadau o'r glannau hynny mewn geiriau gan y newyddiadurwr a'r darlledwr Dei Tomos. Syndod efallai yw sylweddoli mai hon yw cyfrol gyntaf Dei Tomos. Priodol iawn yw gweld y llyfr yn cael ei gyhoeddi ar flwyddyn agor Llwybr Cenedlaethol Arfordir Cymru.

Ymhobman yn y llyfr ceir priodas dda rhwng y testun, ar yr un llaw, a'r lluniau, ar y llaw arall. Ond mae yna fwy o destun na'r hyn a geir yn aml mewn cyfrol o'r math hwn. Mae Dei Tomos yn llwyddo i roi llawer mwy o wybodaeth i ni na sydd ei angen i ddisgrifio'r lluniau yn unig. Ac mae o'n rhoi ei bersbectif ei hun ar lawer o'r nodweddion hyn. Disgrifia ardaloedd fel Y Rhyl lle y bu ar drip Ysgol Sul ers talwm gan nodi fod newid mawr wedi digwydd yno ers y dyddiau hynny.

Roedd gen i ddiddordeb mawr i weld beth oedd yr arlwy ar gyfer Ynys Môn a siroedd y gogledd ac ni chefais fy siomi. Mae testun Dei Tomos yn sôn am un o leoedd cuddiedig Môn, Traeth yr Ora. Dywed ei fod o'n ymwybodol o'r lle hwn ar arfordir dwyreiniol yr ynys ers blynyddoedd ond dim ond tra'n ysgrifennu'r llyfr y cymerodd y cyfle i fynd yno.

Cyfrol gwerth ei darllen a werth ei rhoi ar eich bwrdd coffi a'i bigo i fyny wrth i chi gael eich panaid! Ond cofiwch, mae yna fwy i'r llyfr yma na lluniau gwych, mae o'n llawn gwybodaeth ac yn wirioneddol ddifyr i'w ddarllen hefyd.

Gwenllian J Rowlinson

Be sy mewn enw Cymraeg? What's in a Welsh name?

Adlewyrchu daearyddiaeth a nodweddion y dirwedd y mae sawl enw a geir o amgylch arfordir Cymru yn ogystal â dweud rhywbeth am eu hanes. Tarddiad Llychlynnaidd sydd i enwau sy'n diweddu efo -ey, -ea, -holm, ac -orme ac maent yn adlewyrchu dylanwad y Llychlynwyr a'u cyrch morol yn y 9fed a'r 10fed ganrif.

Many names around the coast of Wales reflect the geography and features of the landscape, and also reveal something of their history. Names ending in -ey, -ea, -holm and -orme are of Scandanavian origin and reflect the sea-faring influence of Viking expeditions in the 9th and 10th centuries.

Aber - ceg yr afon/river mouth
Ynys – tir uwch mewn cors/ island (sea or in a bog)
Abertawe - Swansea • Pen y Gogarth - Great Orme • Ynys Bŷr - Caldey Island • Ynys Enlli - Bardsey • Ynys Môn - Anglesey

Type fossils online

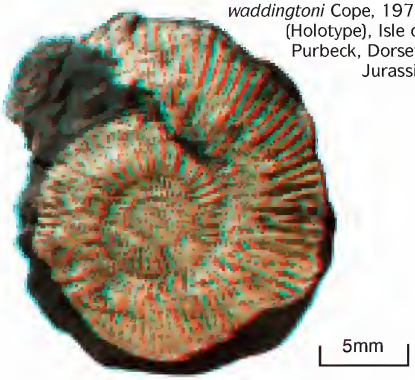
In the Department of Geology at Amgueddfa Cymru–National Museum of Wales, cupboards along one side of the main palaeontology store contain our most precious fossils. These are not the most attractive specimens, nor the largest, and do not have the highest monetary value – but they are irreplaceable. They form the museum's type fossil collection and are scientifically priceless.

Every new fossil species described requires the identification of a single 'type' specimen which then has to be deposited in a recognised organisation and be available to study. Type specimens are the essential reference for taxonomists, both when describing existing species and erecting new ones. Without type specimens it would be hard to keep the integrity of a species: over time the taxonomy could drift so that subsequent species interpretations would not bear any relationship to the original one.

The type collection is a very small proportion of our total collection of over 400,000 fossil specimens from Wales and the rest of the world. Researchers from Wales, the United Kingdom and world-wide use the collections to support their taxonomic research. Palaeontologists at the museum have named many new species of fossils and have sometimes had fossils named after them. For them and for all taxonomists it is essential to have access to type material. Ideally the actual specimen should be examined but this is not always possible. When a new species is proposed it is described in a scientific journal and the type specimen is photographed. However, some older types have not been illustrated and in some publications the images may be of poor quality, making it hard to determine specific features of the specimen.

Rorringtonia kennedyi Owens, 1981 (Holotype), Llandrindod Wells, Powys, Ordovician

Amgueddfa Cymru-National Museum Wales



Anaglyph of *Pavlovia composita waddingtoni* Cope, 1978 (Holotype), Isle of Purbeck, Dorset, Jurassic

JISC (Joint Information Systems Committee) has awarded a grant to the British Geological Survey, in collaboration with several major British organisations including Amgueddfa Cymru–National Museum Wales, to develop a digital database of British type fossil specimens. The project aim is to make the specimens easily accessible via a single online source.

Each British type fossil in the museum's collection is being photographed, and stereo-pairs (anaglyphs) are created. These will be available along with all the geographical and stratigraphical data. Some specimens are also being laser scanned to produce 3D digital models which will be downloadable. Once the website is created British type specimens will be available freely worldwide, a great aid to taxonomic work.

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Marine matters

Natur Cymru records and celebrates the wild places and wildlife of Wales, including the surrounding seas. The article on the movements and social interactions of Grey Seals written by Mandy McMath (NC 41, Winter 2011) was a good example. But what many readers will not know is that it was completed from hospital while she was undergoing treatment for the cancer that ended her life on 30th August. She was the first specialist marine ecologist employed at the Nature Conservancy Council in Bangor, joining before the politically motivated break up. At a time of uncertainty caused by another reconfiguration we can at least look back at some of the achievements in marine conservation during the two decades of the Countryside Council for Wales era.

In 1996 Mandy represented CCW in Milford Haven during the stressful time of the *Sea Empress* oil pollution incident and subsequent impact study. It was Mandy who initiated a survey of the whole coast to plug gaps in knowledge, using the then novel approach of matching air photographs to targeted surveys on foot. As a result Wales gained the best maps of intertidal biotope and species tdistributions of any UK region. Mandy also played a major role in determining the location and extent of the series of marine SACs around Wales. Later she concentrated on the often thorny issues concerning the safeguarding and scientifically robust monitoring of the charismatic marine mammals. As part of this she championed the production of an Atlas of Marine Mammals around Wales and took a personal interest in applying digital photography to the recognition of individual seals. One of the unresolved issues that concerned her is the lack of any SACs in UK waters designated for Harbour Porpoise. Artificial divisions of the seas arising from devolution complicated this. UK waters probably hold more of them than in any other EU country and we may be in breach of Habitats Directive obligations.

Even without the sad loss of a colleague and friend of many concerned with marine science and conservation in Wales, the last couple of years have been dispiriting times. The saga around efforts to safeguard the integrity of Horse Mussel reefs illustrates some of the frustrations. These small areas of seabed provide ecosystem services out of all proportion to their extent, as well as being of interest for their biodiversity. Modern technology in the form of side-scan and multi-beam sonar allowed one of these biogenic reefs to be mapped in detail during collaborations between CCW and Bangor University. Recognising the importance of the area, the North West and North Wales Sea Fisheries Committee used pre-existing by-laws to close a relatively small area to scallop dredging. In summer 2010 CCW scientists, again using side-scan, found and mapped another area not far from the previous closed area. They immediately advised the Welsh Government of the need to safeguard the additional section of reef. By this time Sea Fisheries Committees had been abolished in Wales, though by contrast in England they were reconstituted with conservation specifically in their remits. Even though the CCW team had unrivalled experience in surveying such reefs, action was first delayed by demanding a second opinion and then put off for many months. Astonishingly the Fisheries Unit delayed a consultation on restricting the use of bottom-towed fishing gear in a defined area round the additional reef so it overlapped the opening of the next scallop fishing season. This was tantamount to an open invitation to strip out anything in the area before closure. An Order finally came into force on 1st November 2012, about 24 months after it might have been expected. Enforcement remains an issue, not least because the new area is defined by no less than 17 co-ordinates instead of the four corners of a simple box-shaped area. It is hoped and expected that another Order will soon be laid requiring vessels to be fitted with electronic vessel tracking devices.

Even before the mishandling of the Consultation on Marine Conservation Zones, a disconnect between marine fisheries management and conservation urgently needed to be rectified. Was there more to it than just ineptitude? In a land where "Sustainable" belongs in the lexicon of "New Speak" propounded by George Orwell, anything is possible.

Ivor Rees

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